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Better Trade Relations p. 42
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DECEMBER 1959

$1.00

# FOOD ENGINEERING

FOR MANAGEMENT
IN MANUFACTURING,
PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION

## Automatic Warehouse p. 88

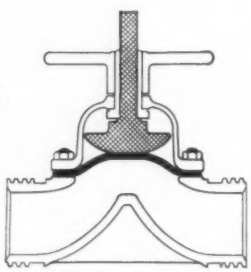
# You can be sure it's kept pure with Grinnell-Saunders Diaphragm Valves

*look!*

① Bodies of stainless steel, sanitary male threads, white enameled bonnets

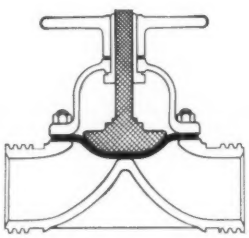
These are some of the reasons why you can be sure of product purity with Grinnell-Saunders Diaphragm Valves. Grinnell offers other body materials and methods of coupling, as required . . . plus a wide choice of linings, including recently developed plastics. In addition, white synthetic rubber diaphragms are available. These impart no taste or color, and are unaffected by cleaning solutions.

② Operating mechanism completely isolated from the fluid stream



Notice how the diaphragm lifts high for streamline flow in either direction, completely isolating the operating mechanism from the fluid in the line at all times. This prevents product contamination. There are no pockets with Grinnell valves — no recesses where the product can become trapped and deteriorate.

③ Product safely protected within the piping system



You can see how the diaphragm and body wholly contain — *and protect* — the product within the piping system. Note, too, how the resilient diaphragm seals tightly against the valve weir to give positive shut-off. Finally, you can see why crystals or food particles can't cause working parts to stick, clog or corrode. Their entry is barred!

For full particulars about the advantages of Grinnell-Saunders Diaphragm Valves, including data on their low cost of maintenance, write Grinnell Company, Providence 1, R. I.

GRINNELL

Pipe, Fittings, Valves, Hangers, Heating and Piping Supplies
Branch Warehouses and Distributors from Coast to Coast

FOOD ENGINEERING

DECEMBER 1959

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**Staley's Food Production Tips**

# in taste, body, color, sheen, profits...

## *Sweetose* makes the difference! Here's why!

**In tomato catsup,** Sweetose protects against browning. Holds rich, red color. Improves gloss and sheen. Enhances flavor. Extends shelf life.

**In pork and beans,** Sweetose insures precise control of browning and sweetness—with tangier, more appetizing flavor—improved color and sheen.

Whatever you process—whether sweet pickles, pork and beans or tomato catsup—bland, crystal-clear Sweetose Corn Syrup will improve the quality of your products.

Where sweetness is important, the unique characteristics of versatile, enzyme-converted Sweetose assure *balanced sweetness*, giving sweet pickles a firmer, crisper body—mellower flavor and brighter sheen, with faster finishing, less softening. Where color and sheen are important, Sweetose holds rich, natural color—gives an appetizing gloss and sheen that wins sales. And taste? Sweetose delivers a tangier, zestier flavor without masking even the most delicate spices.

These are but a few of the many advantages of Sweetose. For complete information on how Sweetose gives your products the characteristics your customers want most—and at *definite sweetener savings* for you, contact your Staley Representative at the branch office nearest you, or write today.

Staley's ®

**A. E. STALEY MFG. CO., DECATUR, ILLINOIS**

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THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

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For Only $75.00 per Month

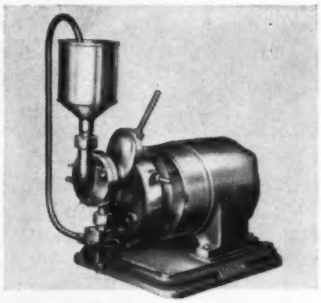
...and see for yourself how Gaulin Particle Control improves product quality and reduces costs

Now, for a few dollars per day, you can have a laboratory homogenizer in your plant to explore the advantages of Gaulin Particle control on your product . . . to produce superior dispersions, emulsions or blend. No special skills are required to operate the machine. It is quickly and easily disassembled for inspection and cleaning.

Maximum capacity is 15 gph; minimum processable sample — 1 pint; pressures to 8000 psi continuous, 10,000 psi intermittent.

Remember, the rental cost is applicable against the price of the machine.

Write for more information and bulletins on the Gaulin Laboratory Homogenizer LH-55, Sub-Micron Disperser SMD-55, Homogenizers H-55.



Gaulin RE* Two-Stage colloid Mill — Model 2A — is available for processing quantities as small as 8 ounces, and is invaluable for research, laboratory or pilot plant applications. Also available on rental basis.

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*World's largest manufacturer of stainless steel reciprocating, rotary, pressure exchange pumps, dispersers, homogenizers and colloid mills.*

*For efficiency and savings available in no other machine of this type, introduce your products to the*

NEW

# fmc FLEXI-FILLER

## MODEL ST—12, 18, 24 POCKETS

**—the startling, all-new machine designed, developed and perfected by FMC for filling granular, free-flowing products into cans.**

Incorporated in the *FMC Flexi-Filler* are way-ahead features of design and construction found in no other can filler. Its broad adaptability to handle free-flowing granular products (see partial list below), coupled with the ease of changing from one can size to another in a range from 211 to 603 diameters, give the *Flexi-Filler* a real flexibility all its own.

Here are just a few of its important features:

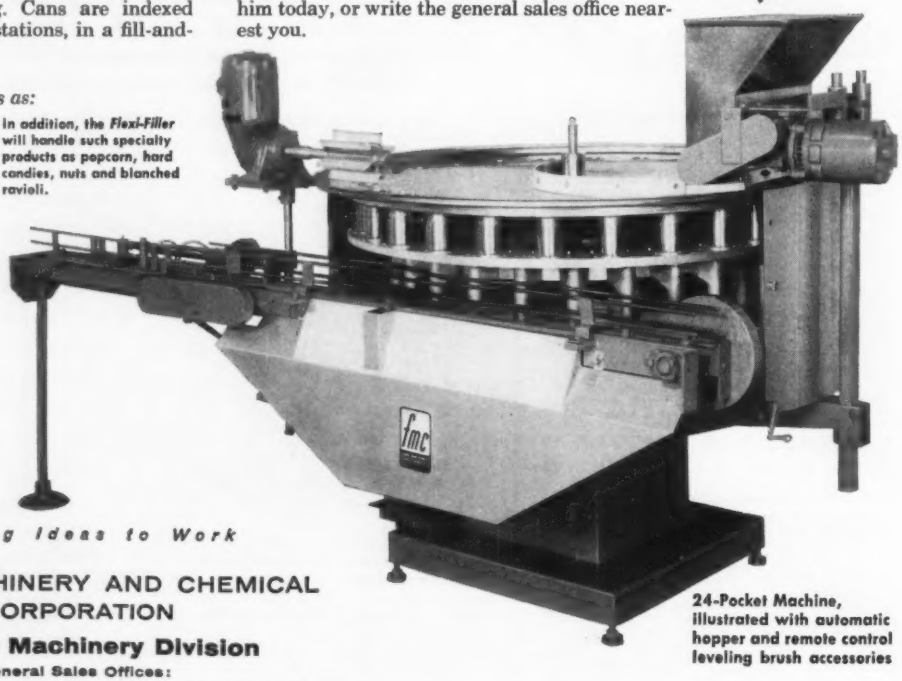
- ***Individual cut-off gates move with the pocket,*** eliminating "dead plate" abrasion problems, and permitting a highly accurate pre-measurement into telescoping pockets – with no product damage.
- ***Synchronized straight-line can travel*** greatly simplifies can handling. Cans are indexed positively under filling stations, in a fill-and-travel sequence that carries them through only 40° of filler's perimeter before they resume straight-line travel. This permits speeds up to 300 cpm, depending on can size and product.
- ***Individual Pocket "No can-No fill"*** prevents discharge from pocket unless can is properly positioned under it. Reduces spillage and waste.
- ***Cleaning up, no matter how frequent,*** is made easy because new design prevents product build-up, and permits thorough wash-down.

Your CMD representative will give you complete details and furnish recommendations based on your specific products and requirements. Call him today, or write the general sales office nearest you.

*Designed for such products as:*

Berries
Cherries
Prunes
Apricot Halves
Peaches, diced or sliced
Beets, small whole or diced
Carrots, diced
Potatoes, diced
Lima Beans
Kidney Beans
Hominy

In addition, the *Flexi-Filler* will handle such specialty products as popcorn, hard candies, nuts and blanched ravioli.



24-Pocket Machine, illustrated with automatic hopper and remote control leveling brush accessories

*Putting Ideas to Work*

FOOD MACHINERY AND CHEMICAL CORPORATION

**Canning Machinery Division**

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# TRENDS & FORECASTS

SPECIAL FOOD ENGINEERING SERVICE to EXECUTIVES

**Demand for food will continue strong in '60. More food is expected** to be available than in '59, and prices to farmers will be lower. Rising trend of plant operating costs may slow little, and profits should be higher. These favorable factors are forecast by USDA.

**Marketing costs likely will be up slightly,** but some retail food prices probably will average a little lower than in '59. Stocks may be somewhat larger at start of '60 than year earlier.

**Employment will be high, with consumer disposable income at record level. More meat is indicated for next year by greater number of cattle** on farms and ranches, and by prospect of large pig crops this fall and next spring. Milk production may at least equal that of '59.

**Civilian per capita consumption of food is forecast at about the same** as in '59, although rate for meat, principally beef, will be a little higher. Some shifts in consumption of dairy items are expected, with total remaining same. Higher demand is seen for fresh oranges and dried fruits.

**Supplies of fresh and processed fruits are forecast as moderately larger** through mid-1960, but fresh vegetables are expected to be in short supply.

**Increase of 5% in volume of foods and beverages sold next year** is indicated by McGraw-Hill Dept. of Economics survey among manufacturers.

**Capital expenditures by food and beverage manufacturers** will total $783 million in '60, down 1%. Food firms will spend $610, off 3%; beverage bottlers, $173 million, up 5%, McGraw-Hill study indicates.

**In 1961, industry will invest $737 million in new plants and equipment**– $606 million by food companies, $131 million by beverages firms.

**Net income of 89 leading food and beverage manufacturers was 9% higher** in first 9 months of '59 than in same period of '58, First National City Bank reports. Profits in '60 are forecast 15% above '59 by government.

**World food production this year is slightly below '58 level,** largely because of 9% decline in wheat. Carryover will help offset decline.

**Business failures in food manufacturing totaled 140 in first 9 months** of '59, compared to 154 for same time in '58. Baking had 36 failures against 38 last year; meat, 23 vs. 28; canning, 15 vs. 26, says Dun & Bradstreet.

**Million more meals daily are being eaten out now compared to '58,** or 67 million a day (including military), reports Gas Appliance Mfg. Assn.

**Opportunities for American food firms with plants in Europe are enhanced** by formation of free-trade group by Outer Seven countries. This group likely will reach agreement with six nations in European common market.

**See Developments to Watch p. 13**

**Nonfarm families increase food purchases 2% when incomes rise 10%,** USDA reports. Figure is 2.5% for lowest incomes, 1.5% for highest.

**Sugar supply will be ample in '60. Despite unrest, Cuba should** produce twice her U.S. quota, says U.S. Beet Sugar Assn. President Shields.

**In upward wage trend, New York area dairy firms have granted increases** averaging $9.05 a week for inside employees, $6.40 for routemen.

# One call, one shipment ...one complete bucket elevator

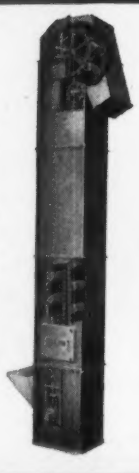
**LINK-BELT makes all bucket elevator components ... all integrated to match perfectly, operate smoothly**

There's no delay, no purchasing or installation problems when you call on Link-Belt for your bucket elevator. And when it's up, you can count on long-term elevating efficiency. Reason: Link-Belt makes *everything that goes into a bucket elevator* . . . from head to boot! By carefully designing, manufacturing and integrating all components, Link-Belt minimizes erection time and costs . . . avoids misalignment that causes inefficiency, bucket and casing wear.

At your request, Link-Belt will gladly erect your elevator and accept full installation responsibility. For complete details, contact your nearest Link-Belt office.

**POSITIVE DISCHARGE** bucket elevator is designed to handle light, friable or sluggish materials, and those tending to stick to the buckets.

Link-Belt's complete bucket elevator line includes 14 types in 4 basic designs . . . centrifugal, positive, continuous and internal discharge. Also a wide variety of buckets. . . steel, malleable iron, Promal or alloy metals. With this broad selection, Link-Belt can provide the proper elevator and components to meet any material and capacity requirement.



**LINK-BELT**

BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,253

## Schedule of Events

December
14-15—Material Handling Inst., annual meeting; Savoy-Hilton Hotel, N.Y.C.
26-J3—Dairy & Food Exposition; Coliseum, N.Y.C.

January
10-14—Potato Chip Inst. International, annual meeting; Netherland-Hilton Hotel, Cincinnati.
11-15—Society of Plastics Engineers, annual meeting; Conrad Hilton Hotel, Chicago.
11-14—National Coffee Assn., convention; Boca Raton, Fla.
17-19—National Preservers Assn., convention; Deauville Hotel, Miami Beach.
18-23—National Canners Assn. convention and Canning Machinery & Supplies Assn. exposition; Americana Hotel, Miami Beach.
25-27—National Dairy Council, annual meeting; La Salle Hotel, Chicago.
25-28—Plant Maintenance & Engineering Conference, convention-exhibit; Convention Hall, Philadelphia.
28-29—Private Truck Council of America, convention; Roosevelt Hotel, N.Y.C.

## HORS D'OEUVRES

▶ Cranberry brainstorm of Secretary Flemming made him a nationally-known personality overnight. We hope he takes advantage of this to advance politically to a less responsible position.

▶ **If the Secretary continues his flea-hunt with Delaney's H-bomb, he'll set manufactured foods back a quarter of a century. You may even see Flemming victory gardens.**

▶ Women love the Secretary for crushing the mighty cranberry dragon in its Thanksgiving tracks. But if he protects them from their favorite lipstick colors, he'll get few kisses.

▶ **When it comes to knowledge of additives, "Women are down on what they're not up on," says Dr. Faith Fenton. We might add that they're also down on what Flemming brings them up on.**

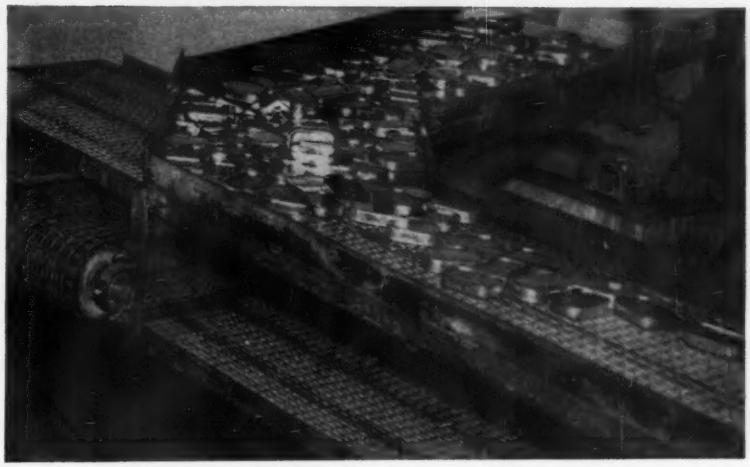
▶ A conference audience seeking facts about additive safety was told to "just ask FDA." Instantly 650 people laughed —there was no "applause" cue.

▶ **"Food is for people," quips a well-known home economist. Someone should tell that to Flemming. He takes a rat's word that it causes cancer.**

▶ When it comes to foods, they are guilty until proved innocent. And they are tried by a prejudiced judge in a newspaper court. Doesn't seem nearly as American as the cranberry.

▶ **In food-justice, condemnation is based upon "could be guilty," not "is guilty." If applied to people, everyone would be behind bars.**


The big PLUS in Oakite



**End-of-season protection cuts next year's start-up costs**

POST-SEASON CLEAN-UP and protective action shows up as a big economy the following season. For example:

Outdoor conveyor chain at one cannery carried containers from railroad cars to interior storage area. Each year the conveyor was torn down, stored, then reassembled at start of the new packing season . . . at a cost of $200. Now, Oakite STEEL PRESERVER is applied to the line in place at season's end. It keeps the conveyor rust-free through the Winter . . . strips off with Oakite detergents, leaving the conveyor ready for instant action at Spring start-up.

Inside plants too, Oakite materials protect equipment during seasonal shut-downs. Recommended procedure: thorough cleaning with specialized Oakite materials; then spraying with Oakite SPECIAL PROTECTIVE OIL, which provides between-season protection against indoor rust. Use STEEL PRESERVER where excessive moisture is expected. In either case, getting equipment back into production shape next season will take fewer man-hours--and cost less.

**The big PLUS in Oakite**

Working with the Oakite man is like adding a consulting cleaning engineer to your staff. He brings with him the results of latest sanitation research . . . information on modern cleaning methods . . . the vast experience of the Oakite organization . . . time—and money-saving equipment . . . materials *guaranteed* to do the job. Ask him for proof. Or, write for Bulletin F-9414. Oakite Products, Inc., 27A Rector Street, New York 6, N. Y.

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CIRCLE 9 ON READER SERVICE CARD 

# NEW FROM DODGE FOR 1960

***The thriftiest trucks, in the widest tonnage range, Dodge has ever built . . . including totally new cab-forward models with diesel or gasoline engines.***

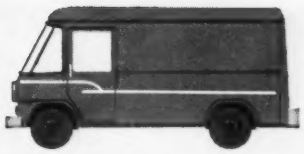
Name your job. There's a Dodge truck to do it. For Dodge has never had a line-up as great as this new 1960 truck platoon. Spirited panels and pick-ups that deliver up to 200 horsepower. Rugged stakes with up to 19,500 lbs. G.V.W. Husky 4-wheel-drive models with wheelbases from 108″ to 174″. All these and more make Dodge your smartest choice for efficient, low-cost hauling. And in the heavyweight class, Dodge introduces a completely new line of cab-forward models, trucks engineered to put real muscle into your biggest jobs, trucks whose new Servi-Swing fenders open with a simple latch and allow you to walk right up to the engine! See your Dodge dealer. He'll be pleased to give you the full Dodge truck story for 1960.

DEPEND ON DODGE TRUCKS
TO SAVE YOU MONEY IN

A PRODUCT OF CHRYSLER CORPORATION

"JOB-RATED" FROM 4,250 LBS. G.V.W. TO 76,800 LBS. G.C.W.

**SWEPTLINE** pick-ups head their class in looks; lead in load space, power. 4-wheel-drive optional.



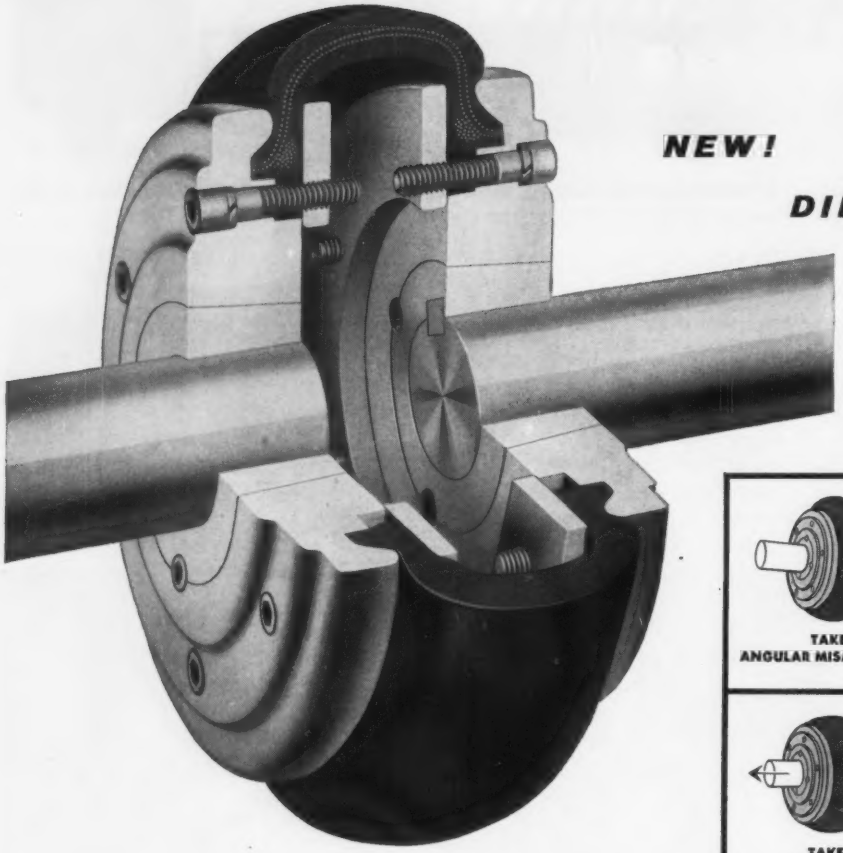
**FORWARD-CONTROL** chassis put famous Dodge dependability under the body of your choice.

**VAN** and other special bodies are easily accommodated by most 1960 Dodge trucks.

**TRACTOR** models with compact new 89¾" BBC pull longer trailers, bigger legal payloads.

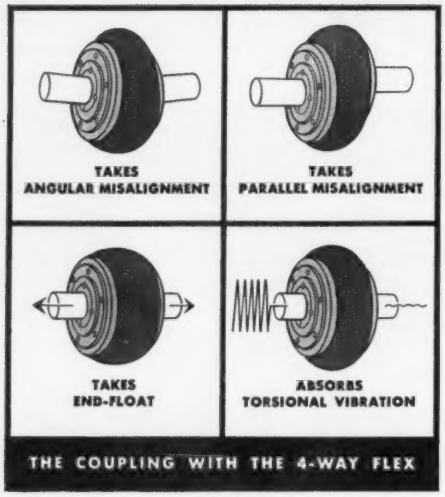
**STAKE** bodies from 7½′ to 14′ are built by Dodge on models to 19,500 lbs. G.V.W.

**TANDEM** units provide top hauling strength for dump and other extra-rugged operations.



**NEW!**

**DIFFERENT!**




**DODGE**

# Para•flex

## FLEXIBLE CUSHION COUPLING

THIS coupling "swallows up" shaft misplacements. It automatically compensates for end-float, parallel misalignment, angular misalignment *or any combination of all three.* Moreover, it cushions the stresses of shock loads. And it absorbs torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

Here is a new type of performance—made possible by the development of a tire-like flexing element. Synthetic tension members, bonded together in rubber, give this element the stamina and dependability of modern, high-speed, high-load, shock-absorbing truck tires—and the ability to respond magically to all manner of changing shaft conditions.

Para-flex takes minimum space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings—no reboring, no machining. Safety is promoted by flush design; there are no protruding parts. No lubrication is required, no periodic inspection. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine.*

Para-flex Couplings are stocked by Dodge Distributors in popular transmission sizes. They are available from factory stock in capacities up to 2000 hp at 1080 rpm. Call your distributor for a coupling to *make your own test.* You'll witness something revolutionary!

DODGE MANUFACTURING CORPORATION, 2800 Union, Mishawaka, Ind.

**DODGE**
*of Mishawaka, Ind.*

**CALL THE TRANSMISSIONEER**—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

# DEVELOPMENTS TO WATCH

SPECIAL FOOD SERVICE to EXECUTIVES

See Who's Building What p. 17

Washington Report p. 19

**Minute Maid expects to freeze-concentrate 40% of its orange juice** this season to protect flavor. Centrifuges remove ice crystals from juice. Some solids are entrapped in ice. MM's process is based on Toulmin operation (FE, Oct. '51, p. 68). Union Carbide owns patents.

**Salt crystals are successfully rolled into thin, quick-solution flakes** in Allis-Chalmers lab. Flakes may be preferable in some food processes.

**Syrup and preserves are being packed in aluminum individual-service** containers by Anheuser-Busch and Smucker. In latters plant, newly developed machine forms containers from roll stock.

**Sugar cane is finely chopped and tossed into vehicle by new Cut-Throw** harvester in Hawaii. Cut cane may be pumped to mill.

**Extraction of sugar from cane by diffusion in Hawaiian pilot tests** looks promising. Yield is higher, equipment cheaper, operating costs lower. Water is pressed from bagasse and reused.

**Fuel cell which generates d.c. electricity by passing gases** through electrolyte in presence of catalyst is Allis-Chalmers development. Experimental 20-hp. tractor is powered by cell. Use in trucks possible.

**Dust is removed from filter bags by simple sonic generator** developed by Fuller Co. Low audible frequency vibrates bags in undulating motion.

**Microbial standards for bakers' ingredients are being considered.**

**Patented tin can has reclosing sanitary top** that overlaps side and is crimped with folded-over part of can body for hermetic seal. Can is sanitarily opened by cutting cap overlap at side.

**High-speed electronic computers will be available on rental** at $300 per hr. in IBM Datacenters in 25 or 30 major cities next year.

**Libby is installing equipment to recover volatile flavor essence** at Ocala, Fla. Essence will be put back into concentrated juice.

**Pallet boxes and straddle pick-up trucks have cut labor costs** in Florida orange groves. And tree shakers are being tested.

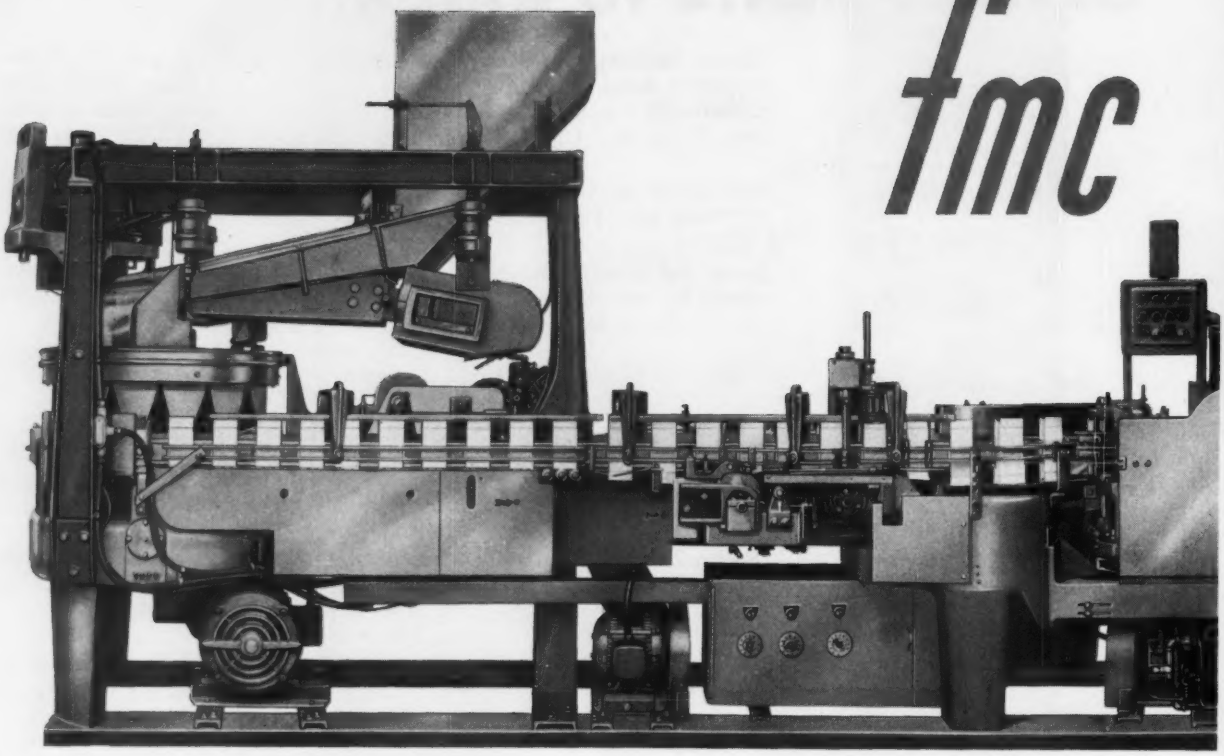
**New separating principle has been developed for rock salt.** Infrared heats salt crystals less than impurities. On discharge from high-speed conveyor belt coated with heat-sensitive resin, warmer impurities tend to stick and leave belt with less momentum than cooler salt crystals.

**Evidence still is inadequate to justify health claims** made by some leading food manufacturers for products containing unsaturated vegetable oils, in the judgment of American Medical Assn., American Heart Assn., Nutrition Foundation, and National Research Council.

**Types of flour never known before are being made by turbo-milling,** and new fractional combinations of wheat components are being developed, says W. L. Haley, Fisher Flouring Mills.

**Watermelon on stick is frozen confection innovation** made from melon juice squeezed in Luling, Tex., and shipped chilled in 4,000-gal. tank trucks to dozens of creameries and other plants.

fmc

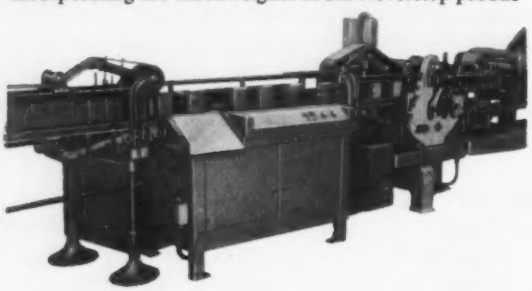


# Reduces carton packaging costs for more products with

NEW DEVELOPMENTS by FMC in the well-known, fully automatic Neverstop machine have once again reduced the unit cost of carton packaging operations . . . and expanded the number of products which can be run on high-speed equipment.

As a result of these developments, speeds up to 450 packages per minute are now entirely practical. With new sealing methods now offered, more and more products which formerly required costly innerliners and overwraps can be handled on a high-speed Neverstop.

AND NOW with the development of a special electronic checkweighing unit, FMC makes available still another basic system for filling products which vary in density. By incorporating the checkweigher in the Neverstop production line as shown below, each package is automatically checkweighed and segregated according to weight variations after it is volumetrically filled. These weights are continuously averaged electronically and corrections fed back to the filling head where adjustments are made automatically to correct over or under filling.



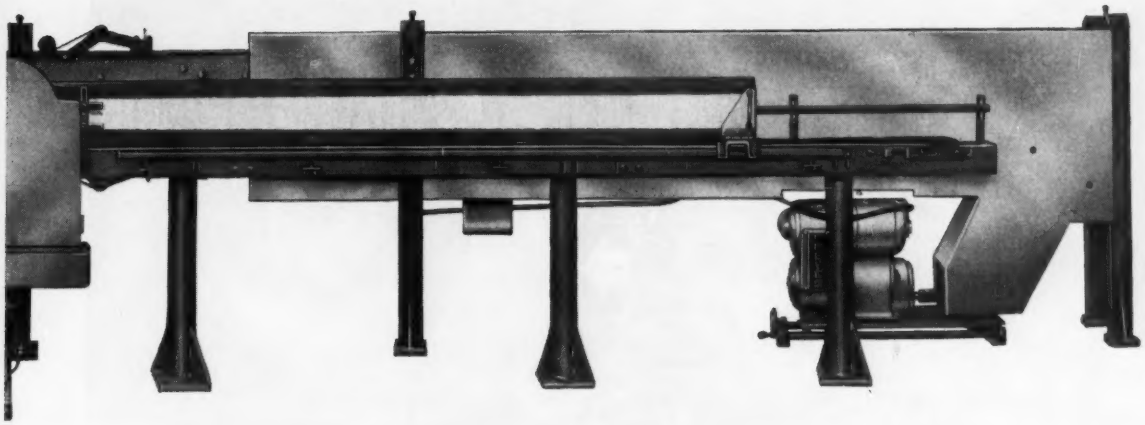
Spot checking and manual adjustment of the filling head are eliminated and production of accurately filled cartons is substantially increased.

**Fully automatic** – Supervised by a single attendant, the FMC Neverstop opens flat cartons from a supply, then fills and seals them at high speed. This completely automatic operation drastically reduces the higher labor cost of semi-automatic machines . . . and frequently replaces several of these units for even greater savings in floor space. To meet your particular requirements, FMC offers six Neverstop models with a choice of speeds, capacities, carton sizes and adhesives.

**High speed** – Production speeds range from 70 units per minute up to 450 per minute depending on filling method, carton size and type of product. Carton feed magazine holds up to 3,000 folded cartons on models which open, fill and seal as many as 200,000 cartons per day.

# neverstop

AUTOMATIC CARTON FILLING AND SEALING



## higher speeds, improved sealing, electronic checkweighing

Unit packaging costs are slashed and valuable floor space is released when two slow-speed automatics are replaced with a high-speed Neverstop.

**Carton sizes** – A wide range of carton sizes–from 2⅜" x 1⅛" x 3⅝" to 11" x 5" x 15½"–can be handled with changeover parts available for carton size changes. Many carton designs can be handled on a Neverstop to provide those package characteristics best suited to the product. Filling capacities range from about one ounce to ten pounds or more depending upon density.

**Filling methods** – Free-flowing powders, granules or flake products can all be accurately packaged on a Neverstop. "Volumetric" filling–a mechanical method of measuring volumes of the product in adjustable pockets –is ideally suited for soap powders, salt, dried vegetables, raisins and certain cereals at speeds up to 300 per minute. "Vibrametric" filling – utilizing a hopper-fed, vibrating chute electronically controlled by product weight–is designed for products with erratic flow characteristics and varying densities at speeds up to 450 per minute.

**Types of seal** – Cartons are top and bottom sealed with any of the conventional cold glues or hot melt adhesives. Constant recirculation and thermostatic control assures quick, tight bonding. To reduce waste and avoid contamination of product, flaps can be pattern glued.

To help you secure the full benefits of fully automatic Neverstop packaging, FMC Application Engineers will be glad to work with you in improving your production and reducing unit package cost. For further information call your FMC representative or write for Bulletin P-808.

*Putting Ideas to Work*

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division

Stokes & Smith Plant

4914 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

CONDENSATE DOES NOT COLLECT
This small piston-like valve, only moving part in the Yarway Impulse Trap, continually tests for condensate, discharges it as soon as it forms.
CLOSED POSITION
OPEN POSITION

# Yarway Impulse puts the heat on steam trap freeze-up problems

Cold weather means nothing to a Yarway Impulse Steam Trap. *Its design offers full protection against freeze-ups,* which cause costly production delays and extra maintenance work.

In the Yarway Impulse Trap there's nothing to freeze. No condensate collects. The only moving part (a tiny piston-like valve) continually tests for condensate and discharges it as soon as it forms. Result—continual operation of steam equipment at high, even temperatures.

Consider this non-freeze feature with these other Yarway Impulse features:

- **Quick heat-up**
- **Low maintenance**
- **Stainless steel construction**
- **Small size—light weight**
- **Good for all pressures**
- **Complete line for all requirements**

—and you have the reasons for nearly 1,300,000 successful installations.

Stocked and sold by 270 Industrial Distributors, coast-to-coast and around the world.

**YARNALL-WARING COMPANY**
100 Mermaid Ave., Philadelphia 18, Pa.
*BRANCH OFFICES IN PRINCIPAL CITIES*

YARWAY
*A MARK OF QUALITY IN STEAM ENGINEERING*

# WHO'S BUILDING WHAT...

**Monthly Report: Food firms to spend $11,805,289 for expansion.**

## Proposed Work

**Aroostock Potato Products Co.**, Aroostock, Me., starch extraction plant, $800,000.

**H. E. Butt Grocery Co.**, Corpus Christi, Tex., bakery, $300,000.

**Coca-Cola Bottling Co.**, Fairfield, Conn., bottling plant, $1,000,000.

**Foremost Dairies, Inc.**, Duluth, Minn., plant addition, $250,000.

**Independent Fish Co.**, St. Louis, Mo., multi-use plant, $1,250,000.

**Kraft Foods, Inc.**, Decatur, Ga., warehouse addition, $200,000.

**J. M. Smucker Co.**, Salinas, Calif., preserves mfg. plant, $750,000.

**Steel D'Oro Biscuit Co.**, Darby, Pa., warehouse, $125,000.

**G. L. Webster Co.**, Cheriton, Va., cannery, $1,000,000.

## Contracts Awarded

**Arkansas Grain Corp.**, Stuttgart, Ark., soybean oil extraction plant, $1,500,000.

**Armour & Co.**, Houston, Tex., meat processing and distribution center, $2,250,000.

**Bavarian Brewing Co.**, Covington, Ky., bottling plant, $150,000.

**Gooch Packing Co.**, Abilene, Tex., meat packing plant, $300,000.

**O. Hudephohl Co.**, Cincinnati, Ohio, brewery plant, $1,000,000.

**Lever Bros.**, Los Angeles, Calif., warehouse, $290,000.

**Lone Star By-Products, Inc.**, Sabine Pass, Tex., fish processing plant, $110,000.

**Milk Products Corp.**, Norfolk, Va., milk processing plant, $140,307.

**Southeastern Hatcheries, Inc.**, Forest, Miss., poultry processing plant, $279,982.

## Others

**Prince Marcaroni Mfg. Co.** will establish a branch plant in Puerto Rico to produce marcaroni and allied products.

**Safeway Stores** expects to complete a new 60,000 sq. ft. baking plant in Clackamas, Ore., by next spring.

**H. Fischer Packing Co.**, Louisville, Ky., smoke house addition, $110,000.

*"Famous Name" food products ride on* **WISSCO BELTS**

The giant steelman reflects CF&I's ability to design and make quality steel products for particular requirements. Many CF&I-Wissco Belts, for example, are engineered specifically for food processing-conveying jobs.

**Beech-Nut Life Savers, Inc.** relies on Wissco Stainless Steel belting because the open mesh construction allows uniform, efficient air circulation for cooling, and eliminates flavor-transference problems in their candy processing. And for dependability and economical operation, Beech-Nut reports: "Absolutely no downtime due to belt repair or replacement in 30 years of using Wissco Belts."

The steel in a Wissco Belt withstands the rigors of flash freezing, the heat of cooking or baking, the corrosives of washing or draining—*without stretch, distortion or breakup.* Wissco Belts are supplied in stainless steel—to help meet sanitation regulations—as well as galvanized, carbon or alloy steels for specific applications.

Every Wissco Belt is *washed before shipment* so it can be put into operation as soon as it is installed. And your Wissco Belt will be *shipped on a reel,* ready for quick, easy installation. Reels cost much less to ship and store than the usual multiple crates.

For complete information on Wissco Belts, send the coupon below... without obligation, of course.

**WISSCO BELTS**
**THE COLORADO FUEL AND IRON CORPORATION**

*In the West:* **THE COLORADO FUEL AND IRON CORPORATION**—Denver and Oakland
*In the East:* **WICKWIRE SPENCER STEEL DIVISION**—Atlanta · Boston · Buffalo
Chicago · Detroit · New Orleans · New York · Philadelphia
**CF&I OFFICE IN CANADA:** Montreal

CF&I STEEL

7158

Advertising Department FE
The Colorado Fuel and Iron Corporation
575 Madison Avenue, New York 22, N. Y.

☐ Please send me, by return mail, your new folder on Wissco Belts for Food Plants.
☐ Please have a Wissco salesman contact me for an appointment.

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DOUBLE THE PROTEIN QUALITY... Now you can market a specialty bread with the high quality protein value of meat or milk. Pfizer L-Lysine, added in recommended amounts to the mix, activates the protein potential of wheat flour... gives your loaf up to twice the protein quality. ■ Think what this means to today's nutrition-minded family—your customer. You can offer a product that meets their requirements for high quality protein...a product that gives you more powerful promotional opportunities than ever before. ■ Of course, Pfizer L-Lysine does not affect the taste or texture of your bread. ■ The new low price of Pfizer L-Lysine makes it economical to unlock the latent power of wheat in your bread. Capitalize on this important "Family health bonus"—it means increased nutritional value to your customers...and more sales to you.

Science for the world's well-being

Pfizer

Quality Ingredients for the
Food Industry for Over a Century

Chas. Pfizer & Co., Inc., Chemical Sales Div., 630 Flushing Ave., Bklyn. 6, N.Y. Branch Offices: Clifton, N.J.; Chicago, Ill.; San Francisco, Cal.; Vernon, Cal.; Atlanta, Ga.; Dallas, Tex.; Montreal, Can.

## Post Additives 'White List': 182 OK, 6 Off

A list of 182 additives deemed safe for use in foods, without need for further proof by manufacturers, has now been published by FDA.

**This is 6 less than the 188 in the preliminary draft of a year ago—the additives failing to make the list being carbon black, charcoal, titanium dioxide, and ultramarine blue (classified under colors) and oleic acid and linoleic acid (under buffers and neutralizing agents).**

Omission from the list doesn't mean that these 6 are prohibited but rather that they require additional gaging. They still may win through to Okays via the checking channels mapped out in the new food additive law.

Basic of the FDA approvals was response of some 355 experts to an additive questionnaire-check.

Most recent developments are detailed in "Know Your Additives Mess!", p. 37 of this issue.

**For full original working list of the additives, turn to pages 46-48 of your Jan. '59 FE. Included are buffers and neutralizers, preservatives, neutrients, non-nutrient sweeteners, stabilizers, emulsifiers, plus tolerance-and-use specifications. See also listing of materials approved for packaging—p. 44, July '59 FE.**

## High Court Weighs Critical Price Case

The top legal yardstick is about to be applied to a key price-play tactic. In short, the U. S. Supreme Court is now reviewing the long-hanging Anheuser-Busch price-cutting case.

FTC originally charged that the beer company violated the Robinson-Patman Act when in 1954 it lowered the price of its premium beer in the St. Louis market while maintaining the higher tags in all other sections of the country.

Subsequently, the 3rd Circuit Court of Appeals in Chicago held that price discrimination doesn't enter the picture except "where there is some relationship between the different purchasers which entitles them to comparable treatment."

FTC has always successfully argued that a nation-wide seller violates R-P by reducing prices in one area if the effect is to drive out local competition, while holding prices high in other markets.

The anti-trusters, in appealing to the Supreme Court, protest that the lower court has turned the law around and would require evidence that local distributors actually compete with distributors in other areas of the country.

Upholding of this theory, they contend, would shut the door on future cases of this kind, since retailers in one region rarely if ever compete with retailers elsewhere.

## Users Push for 9.8 Sugar Quota

Strong pleas for boosted sugar supplies in '60 were heard by USDA at its recent fact-finding hearing preceding setting of the quota.

**Industrial users want the total stepped up to 9.8 million tons—600,000 tons over the 9.2 figure posted at the start of '59.**

They say the extra tonnage is required (1) to meet growing demands, (2) to represent a contingency stock as insurance against unsettled conditions in Cuba, and (3) to act as a price-brake.

As in past years, however, spokesmen of grower groups voiced opposition. Favoring maintenance of price levels and more optimistic about Cuba continuing its flow, most prefer holding the line around 9.2. A few are for a cut to 9.0.

**Fact that the Sugar Act is due to expire next year has particular bearing.**

With a revamping expected, there's new pressure for modifying Cuba's quota (now around the 3-million-ton mark), also for easing quota shifts when developments demand balancing of the supply picture.

## Work to Smooth Exports and Imports

There are always bumps on the export-import road. Latest developments:

Florida, seeking new outlets for burgeoning citrus crops, has run into difficulties relative to British import rulings. Only natural-color oranges are presently accepted into England, the British Ministry of Health having not yet OK'd the citrus dye, Red No. 2. Further, grapefruit imports are tightly restricted to the period Apr. 1-Sept. 30.

Both the State Department and USDA have been championing Florida's case for liberalizations.

Meantime, other nations are pressing for a lifting of U. S. restrictions on agricultural imports. And the State Department has heeded their calls to the extent of supporting an easement on dairy products. An influence here will be the Tariff Commission's findings on the effect of widening the door to Dutch and Italian cheese (FE Nov., p. 21).

The international working body, known as the General Agreement on Tariffs & Trade (generally abbreviated to Gatt) has been active in meetings in various parts of the world.

## BRIEFS

**Efforts to build a frozen-food trade in Europe** are now getting an added spark from the Organization for European Economic Cooperation (OEEC). Big hurdle is present lack of cold-holding facilities, producer to distributor to consumer.

**"Product & Process Evaluation Staff"** is special new working team in USDA's research service. Director is Dr. J. R. Matchett, assistant to administrator, ARS.

**Broad new fish research,** meticulously evaluating protein, oil, and other contents of 240 commercially important fish and shellfish, is urged by American Fisheries Committee, Dept. of Interior. Aim is renewed development of natural values—deemed pertinent after recent sidetracking by synthetics.

**International Coffee Agreement,** teaming 17 nations in the task of untangling the supply-and-price knots, appears to be making progress. The group is now keying exports to the stable performance of 1958, with quotas distributed quarterly for new balance.

# from canned soups . . .

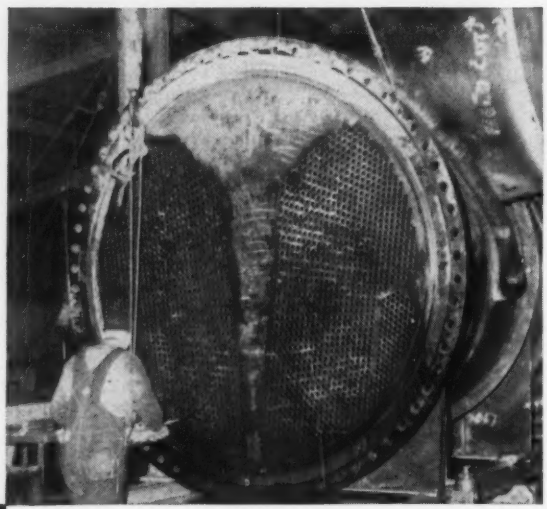
# REPUBLIC ELECTRUNITE STAINLESS STEEL

Nature gave it taste. Republic ELECTRUNITE® Stainless Steel Tubing protects the quality. From field to freezer, from processing to serving, ELECTRUNITE Stainless Steel Tubing preserves the true, rich flavor, purity, and color.

ELECTRUNITE Stainless Steel lines resist corrosion and contamination—with no metal pick-up. They offer food processors and canners additional economies in reduced maintenance and clean-up time. Smooth, free-flow ELECTRUNITE lines stay smooth, with all the free-flow advantages.

ELECTRUNITE Stainless Steel Tubing is produced from highest quality steels, carefully controlled through every step of manufacturing. Available in sizes ¼" through 5" O.D.—I.D. polished, O.D. polished, or both, in all popular sizes. Where polished surfaces are not specified, ELECTRUNITE BRIGHT ANNEALED tubing with its characteristic smooth cold rolled finish offers the most sanitary surface available at no extra price.

Learn about the advantages of ELECTRUNITE. Call your Republic ELECTRUNITE Stainless Steel Tubing and Pipe distributor. Or, write direct.



**UNIFORM QUALITY** . . . E. J. Kelly & Associates, Inc., prominent West Coast designers and manufacturers of heat exchangers, condensers, and evaporators for the frozen juice industry, like the uniform quality of Republic ELECTRUNITE Stainless Steel Tubing. Uniform ductility makes rolling-in easy. Uniform concentricity and wall thickness are completely dependable.

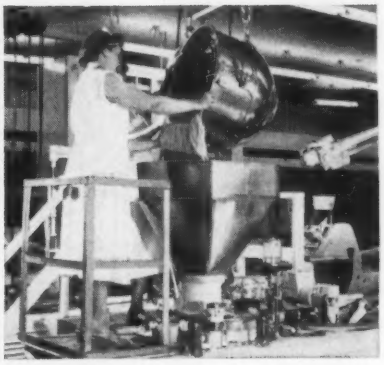
**BRIGHT ANNEALING SAVES TUBE POLISHING COSTS.** Republic's continuous bright annealing furnaces produce a tube with a hard, high quality finish in sizes from ¼" through 4" O.D. Every foot of this tubing has uniform wall thickness, is perfectly concentric, meets every requirement of ASTM and ASME. Get a dense, lustrous finish without paying high polishing costs. No final acid pickling operation to roughen surface and create pockets for contaminants to lodge.

. . . to frozen desserts

# TUBING is your assurance of QUALITY . . .

**REPUBLIC STEEL DRUMS** assure complete protection of your product during handling, shipping, storing. Drums are available in 55, 30, and 20-gallon capacities. Choose from ENDURO® Stainless Steel, or a wide variety of other metals and finishes. Write for catalog.

**REPUBLIC ELECTRUNITE** "Dekoron®-Coated" E.M.T. protects electrical wiring systems in meat-packing, canning, food processing operations where excessive corrosive fumes or moisture are a factor. Tough coating of polyethylene resists corrosion. Available in rigid steel conduit.



**ENDURO® STAINLESS STEEL BINS** protect true flavor of dry ingredients used in Pepperidge Farm's bread, "brown and serve" rolls, salt sticks, club rolls, cinnamon buns, and other bread and pastry products. Stainless steel is easy to clean and keep clean. Easy to sterilize, too. Write.

**REPUBLIC STEEL**

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Firm_____
Address_____
City_____ Zone____ State____

# Revolutionary New Frozen Fruit Package!

**Triple Treated.** Pak-in-Carton, produced by Western-Waxide, consists of a liquid-tight polyethylene pouch, a standard lock-tab folding carton and an overwrap with a coating containing polyethylene. Pak-in-Cartons cut packaging costs up to 35% over canisters.

**Seeing's Deceiving.** Both packages above hold 10 ozs. Notice how much larger the Pak-in-Carton appears! Pak-in-Cartons have 67% more display area than canisters. Extra display means more attractive packages and stronger brand identification for impulse buying!

## Crown Poly* Pak-in-Carton offers amazing consumer conveniences—gives packers 5 big savings over costly, old-style canisters:

In the past five years, consumption of frozen fruits and berries increased more than 50%. Yet, many packers knew this market should have increased even more. One possible reason was that their package was not as easy to use as other frozen food packages.

Nearly 95% of all retail frozen fruits and berries were packed in canisters. At the time, canisters were the most economical package providing complete liquid tightness. But with the advent of economical, liquid-tight polyethylene for packaging, experiments were undertaken to develop a new and more convenient package for fruits and berries.

As a result, Western-Waxide Division of Crown Zellerbach Corporation, San Leandro, Calif., now offers the Crown Poly* Pak-in-Carton. Utilizing pouches of polyethylene film for complete liquid tightness, Pak-in-Cartons eliminate all the consumer disadvantages of canisters (see photos). And they provide these five savings for packers:

1. **Cut Packaging Costs.** Using inexpensive polyethylene film made of Spencer Chemical Company's** "Poly-Eth" Polyethylene, Pak-in-Cartons slash packaging costs up to 35% over conventional packaging.

2. **Cut Storing Costs.** All components of Pak-in-Cartons are stored flat or in rolls. Canisters must be stored with one metal end crimped on. Pak-in-Cartons require 83% less storage space.

3. **Cut Shipping Costs.** Pak-in-Cartons weigh 5% less than canisters. This adds up to big savings in freight costs.

4. **Cut Handling Costs.** Pak-in-Cartons stack easier than bulky canisters, and have no metal edges to scuff labels.

5. **New Labeling Flexibility.** Pak-in-Cartons may be stored indefinitely without overwrap, and then wrapped when sold.

Spencer Chemical Company has pioneered in the development of polyethylene resins for frozen food packaging. For assistance in utilizing polyethylene for your requirements, contact Spencer Chemical Company.

*Crown Poly is a registered trademark of Crown Zellerbach Corporation.

**Spencer Chemical Company markets Spencer "Poly-Eth" Polyethylene, from which polyethylene film is made, Spencer "Poly-Pro" Polypropylene and Spencer Nylon. "Poly-Eth" and "Poly-Pro" are registered trademarks of Spencer Chemical Company.

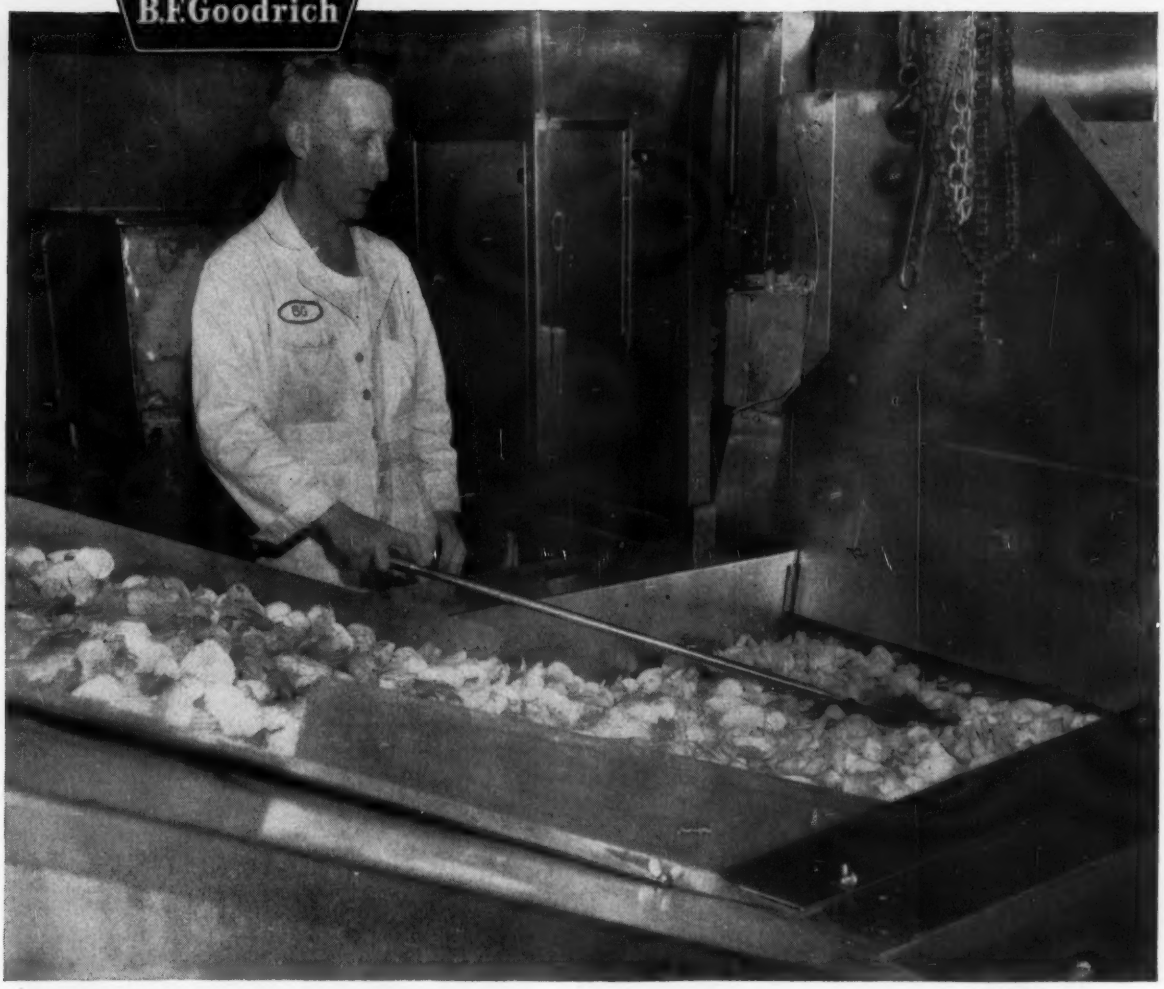
**C-ZIP String.** Western-Waxide's special C-Zip tear string makes Pak-in-Cartons the easiest to open frozen food packages ever produced. Pak-in-Cartons without C-Zip can be opened with scissors or any other sharp instrument.

**Speed Thaw.** In less than 10 minutes, Pak-in-Carton berries are thawed and ready to eat. Berries in canisters require up to two hours to thaw. Water can't seep through the Pak-in-Carton's polyethylene pouch during thawing.

SPENCER® Poly-Eth® Polyethylene

SPENCER CHEMICAL COMPANY, DWIGHT BLDG., KANSAS CITY, MISSOURI

B.F.Goodrich



# They wanted a conveyor belt that hot oil couldn't ruin

As hot potato chips pour out of that deep-fat fryer, a conveyor belt takes them on to the next operation. But the sizzling cooking oil that comes along with the chips caused trouble. It made the conveyor belt soft and spongy. Edges frayed, the cover came loose, before long the belt literally fell apart.

Then a B.F.Goodrich distributor heard about the problem. He recommended a B.F.Goodrich belt, made of Koroseal flexible material, that stands cooking oil, animal fats, most acids, hard use. It resists cracking and peeling, never gets soft and sticky.

Oil can't soak into Koroseal's smooth, nonporous surface. Food particles, even abrasive salt, can't grind in. That's why this belt is so easy to clean. Just an easy wipe with a damp cloth and detergent, and a Koroseal belt is clean and new-looking again.

The Koroseal belt in this plant has carried millions of pounds of potato chips in the past two years. It's still in fine condition, looks as though it will last indefinitely.

Koroseal is typical of the belts developed by B.F.Goodrich for fast, clean handling of food products. If you would like to know more about these conveyor belts and exactly what they can do, ask a B.F.Goodrich distributor for a copy of the Conveyor Belt Selector booklet. Or write *B.F.Goodrich Industrial Products Co., Dept. M-739, Akron 18, O.*

Koroseal—T. M. Reg. U. S. Pat. Off.

**B.F.Goodrich *industrial products***



CIRCLE 23 ON READER SERVICE CARD 

# NEW PACKAGES & PRODUCTS

## Buitoni Adds Sauce With Meat Balls

A new heat-and-serve Sauce With Meat Balls to complement spaghetti or to be eaten as a main dish is being introduced nationally by Buitoni Foods.

Brightly colored in brown, white, and yellow, the label carries an appetizing picture of the product. Cooking instructions are also displayed, along with brand name and compay trademark.

Product weight is 15¾ lb. and included are eight meatballs.

New sauce is eighth in firm's line, which includes Marinara, Mushroom, Meat, Pizza, Number Five, Clam, and Meatless.

## New Display for Jack Frost "Cubes"

An inner tray that insures simple and tight reclosing after use is featured in the new Jack Frost packages designed for sugar "Cubes," which are now appearing on store shelves.

Formerly known as "Midgets," the Cubes are packed in a re-designed 1-lb. carton which claims immediate product identification and strong shelf visibility.

New name appears in white letters on red block, and the Cubes are indicated in actual size. Tradename and Jack Frost figure are also prominently displayed in the blue-and-white theme of the National Sugar Refining Co. product.

## Three New "Chips" for Keebler

Lemon Chip, Caramel Chip, and Chocolate Chip cookies are the latest additions to the line of Keebler Biscuit Co.

New cookies are packed in an attractive, 10½-oz., chipboard container with waxed white overwrap and waxed inner wrap. Each package features illustrations of the product in lower left front corner. Upper left corner has a picture of brightly colored lemon, tempting caramel squares, or a piece of rich chocolate.

Lettering, on a white background, is in forest green for Lemon Chips, rich brown for Caramel Chips, and cocoa brown for Chocolate Chips.

## Sauce-Quik Switches to Cans

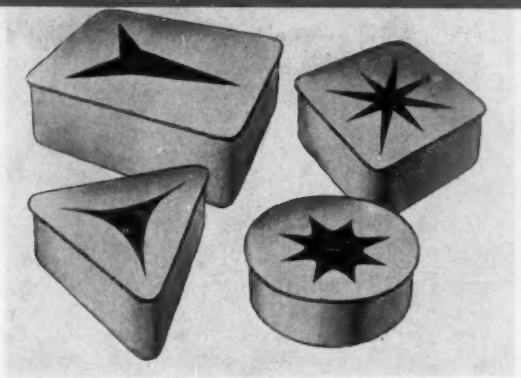
Attractive 4-lb. lithographed cans have replaced 2-lb. paper cartons for Ac'cent International's all purpose base, Sauce-Quik.

Features include reclosable top for small quantity use, and wide mouth for easy scooping. Bright red and white label offers preparation directions for white sauce, brown sauce, and gravy.

Contents of can yield 10-12 quarts of medium sauce, 13-18 quarts of thin sauce.

Continental Can Co., producer and developer, claims trio of advantages: Easy-to-store, easy-to-open, and easy-to-use.

Circle 402 on Reader Service Card



## Packages for Electronic Ovens

Prototype frozen food packages designed for electronic ovens are now under study by Kaiser Aluminum & Chemical Corp.

Smooth-wall containers, filled with complete family-size dinners, have aluminum tops with vari-shaped die-cut windows. Aluminum shields food from electronic impulses, but windows allow transmission to preferred contents. Thus, meat can receive more heat than vegetables. Other items can be shielded from direct cooking.

Kaiser reports similar design for laminated cartons and pouches. **Circle 403 on Reader Service Card**

## Au Gratin In the Can

Au Gratin Potatoes, a new blend of Irish potatoes, cheese sauce, mushrooms, and diced red peppers, is being introduced nationally to six major market areas—Chicago, Detroit, Cincinnati, Indianapolis, Columbus, and Louisville.

Under development by Butterfield Foods for three years, the new canned product reportedly has performed well in three rigid testing areas:

In homes—for preference and willingness to buy.

In store-owner checks—for price, size, label, and promotion.

In stores—for on-the-spot reactions.

## "Old Salt" Gets New Look

Foil surfaces inside and outside give quality and distinction to the new 10-item assortment of Old Salt sea food specialties.

Hinged, tuck-in lid permits easy opening and closing. "Old Salt" fisherman appears on labels and individual packages, which include shrimp, crabmeat, shad and herring roes, shad fillet, and crab and oyster bisques.

Suitable for gift-giving, new box is made of a special foil-laminated board developed by Stone Container Corp. It replaces old regular corrugated item with conventional flaps. **Circle 404 on Reader Service Card**

## New Look for Falstaff

Sparkle, taste-appeal, and a look of sophistication are accented in new design of Falstaff Beer's six-pack cartons and 12 oz. cans.

Designed by Lippincott & Margulies, new carton features a white and gold color scheme, emphasized with gold stars, golden cartouche and bands, on a background of white. A moist, foaming glass of beer is displayed for added appeal and shield trademark has been redesigned. Similar theme is used on cans.

Company officials sought new design "to increase brand identification and to obtain a more dramatic shield background." **Circle 405 on Reader Service Card**

## How Neptune Syrup Meter

# PAID OFF TWO-TO-ONE

### in first year at J. Hungerford Smith

By permitting purchases of caramel color at tank-car prices, a complete storage and metering system paid for itself twice over in materials costs alone during the first summer. And this is only part of the savings made by J. Hungerford Smith Company, manufacturer of fine root beer flavors.

Formerly, the caramel color was purchased in drums, requiring much man-handling and storage space. It took a man full time to measure the syrupy material with buckets. Now it takes only a few seconds for each batch. The operator simply sets up the Auto-Stop and opens the valve. The meter does the rest... shuts off automatically at the exact quantity required by the formula. The meter even turns the pump on and off.

Biggest advantage of all, according to Mr. W. Carvel Martin, plant manager: "It takes the guesswork out of the formula."

You can make savings like this in your plant.

**GET THE FACTS**
*Ask for helpful Meter Data Bulletin 566 LF See Neptune Data Pages in Chemical Engineering Catalog.*

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**NO-ALCOHOL CHAMPAGNE** is new grape juice extract from San Benito Co. Named "Tiara Celebration," new drink is similar to champagne in bottle design, taste, and color.

## Packaging Briefs

**Shipping carton** which converts to tray pack is now being used by Campbell Soup Co., which reports big time-savings at retail level. (406)

**"Wide-Top" jar** has been introduced by Gerber Co. as a result of consumer preference tests evidencing added convenience in storage, heating, and spooning.

**Composite container** for shipping liquids developed by Packaging Research Lab combines polyethylene tanks in 5, 15, 30, 55 gal. sizes with returnable wireboard overwrap. (407)

**Two-way overwrap** which can be displayed vertically or horizontally is featured in Idaho Frozen Foods' new Rusettes whole peeled potatoes. Crown Zellerbach produced new "convertible" design. (408)

**Redesigned trademark** by Wm. Underwood Co. marks change in oldest food-canner symbol, the Red Devil.

**Tubular polyethylene film** with improved clarity and gloss is reported by lab of U. S. Industrial Chemicals Co. (409)

## New Product Shorts

**Prun Apple,** from Bowman Apple Products Co., makes debut in fruit juice market.

**Heinz Baby Foods** has begun national distribution of Strained Pineapple Juice.

**Spudnacs,** new ready-to-serve potato product, is being introduced by H. W. Lay & Co.

**Peach and watermelon** are latest flavors in Royal Gelatin dessert line.

**Latest news** from Carnation Co. notes introduction of new 20-qt. package of instant dry milk and marketing of new Trio product, Idaho mashed potatoes.

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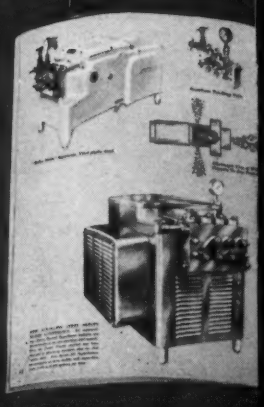
CIRCLE 27 ON READER SERVICE CARD



HOMOGENIZATION INSURES FLAVOR UNIFORMITY
IN DEL MONTE TOMATO CATSUP

# *Profitable Brands Start With Cherry-Burrell Processing Equipment*

## California Packing Corp. uses Cherry-Burrell Homogenizers to insure flavor uniformity in Del Monte Catsup.

Smooth. Even textured. Pours easy, too. On meats from steak to hot dogs, Del Monte Tomato Catsup is the flavor favorite of families throughout the country.

Pineapple distilled vinegar makes tomato flavor come alive in Del Monte Catsup — every bottle, every time. Cherry-Burrell Superhomo homogenizers are used to insure this flavor uniformity — smooth, even texture, too.

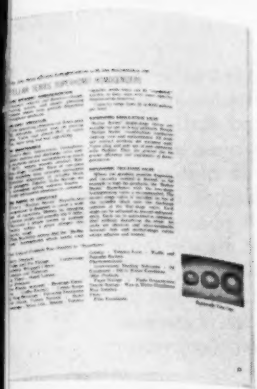
Superhomo homogenizers do the job so thoroughly there's no chance of liquid separation back to a pre-homogenized state. High-speed shearing action of homogenizing valve reduces pectin particles to equal size. Disperses particles, flavoring oils and other ingredients, evenly throughout the product.

**In-plant profit, too.** Hydraulic sealing for maximum wear. Pressure inside of cylinder block takes over during operation. Completely seals all gaskets. Gives longer gasket and plunger life. Low operating pressures cut down peak load demands, reduce wear on moving parts.

Another Cherry-Burrell product used extensively in the food industry is the Thermutator heat exchanger. Specially designed for use on heavy-bodied products, it heats to 350° F., cools to —50° F. without burn-on or freeze-on.

A Cherry-Burrell Sales Engineer will be glad to show you how these and other Cherry-Burrell products can help solve your processing problem. Call today. There's no obligation.

*Equipment for homogenizing, heating, cooling, flavorizing, storing, separating, freezing, mixing, packaging and conveying.*



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# HOW **AVISCO®** CELLOPHANE SEALS IN GOODNESS

Cellophane is much more than a sparkling, transparent wrap that adds sales appeal. The film itself and the consistent, secure sealing it provides make it unmatched for *locking in* aroma and flavor—and keeping foods *fresher longer*. There are types of Avisco cellophane to give the exact moisture control different foods need. These films are also gasproof and impermeable to grease. What's more, cellophane is basically the most *versatile* of all films. It can be tailored to meet almost any requirement. Chances are there's a special coating or lamination that's just right for *your* product. What about cost? The initial cost of Avisco cellophane is *low*.

But even more important, its performance is *trouble-free* on high-speed packaging machines. Cellophane feeds and forms perfectly because it's rigid and static-free. And it heat-seals quickly and securely over a wide temperature range. Just as important is its *consistency* of quality. We offer a complete packaging service to assist you and demonstrate how Avisco cellophane, plain or printed, will answer your requirements *better* and *more economically* than any other packaging material. Contact us for an appointment with our representative in your area or a selected cellophane converter specializing in your field.

AVISCO

**AMERICAN VISCOSE CORPORATION,** FILM DIVISION

1617 PENNSYLVANIA BOULEVARD, PHILADELPHIA 3, PA,

←CIRCLE 29 ON READER SERVICE CARD

CIRCLE 30 ON READER SERVICE CARD

# Don't Let the Cranberry be a Useless Martyr

It had to happen. Put too much power in the hands of a politically minded official and he'll use it. Give an overzealous bureaucrat a ridiculous legal excuse to scream "wolf" and he will do so—at a press conference.

Combine these two unhappy circumstances—as is done in the Food Additives Amendment of 1958—and you see a Washington chef make sauce out of a cranberry industry.

We told you so before the Amendment was enacted. Those wise in the ways of Washington saw the hazards. Unfortunately, our industry gave in to the public-relations fear that to fight a food-safety bill, no matter how poor, could be construed as a fight against safe foods.

**Should have fought it out in '58**

It would have been better to take such risk in '58 than to see the industry permanently set up as a clay pidgeon—with a Delaney gun in the hands of a trigger-happy official.

Cranberries prove these points. They are a victim of a ridiculous and impractical provision in the Federal food law.

The Delaney clause unrealistically allows no tolerance for a safe, minute amount of a substance that might cause cancer in tremendous, prolonged doses. Yet the Food Additives Amendment of 1958 properly permits safe quantities of other materials that could be harmful if eaten in large quantities.

The cancer clause was added at the last minute as the additive amendment was rushed through Congress for enactment before adjournment in 1958. Expert food scientists and toxicologists were not given a fair chance to expose its unworkable and damaging aspects. If they had, it is not likely that cranberries would have been condemned for containing such an insignificant amount of aminotriazole that a human would have to eat 15,000 lb. of the berries a day to suffer harm. Nor would the cranberry industry have taken the unexpected and staggering blow that stymied sales.

We believe that this case will force modification of the Delaney cancer clause to make it reasonable and workable on a safe, practical basis. If it isn't modified, there will be more unjust damage.

**Your product could be next one damned**

How do you know that one of FDA's rats won't suffer if fed unrealistically heavy doses for life of some obscure, even to you unknown, element in your product?

Safety is not the issue—merely a point of ridiculous law.

That Secretary Flemming could have handled the cranberry case without disastrous damage to the industry is beside the point. He didn't choose to do so. He likely will not choose to do so in a future case—nor any future HEW secretary.

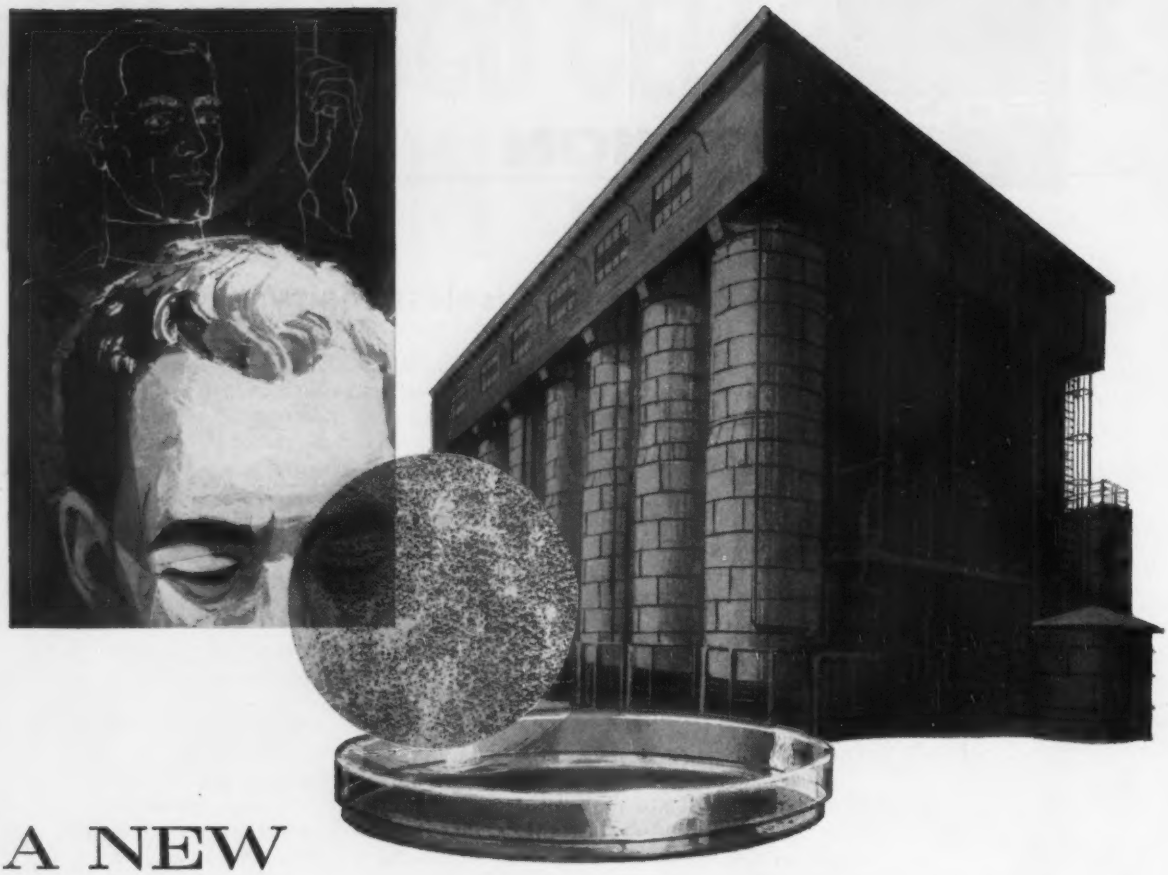
For these reasons, the law must be modified on the cancer point. And the effective date of the law must be extended. Our industry is in an impossible additive mess.

The report on the recent food additives conference in Washington (page 37) points up the problems.

Food and additives manufacturers will have to get Congress to take them off their present hot seat—and to keep Delaney out of color legislation.

What's more, the food industry must set up an organization to speak for it in the technical terms of additive toxicology.

Your products have to live—or die—with a Federal food law in a long future.



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For years Miles has produced a considerable volume of citric acid mainly for its own use in pharmaceuticals. A unique deep fermentation process, pioneered by Miles, yields a product remarkably free from contamination and meets Miles' most strict purity and mesh specifications.

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Write for full details. A Miles Chemical representative will be happy to discuss your requirements at your request.

Miles Chemical Company
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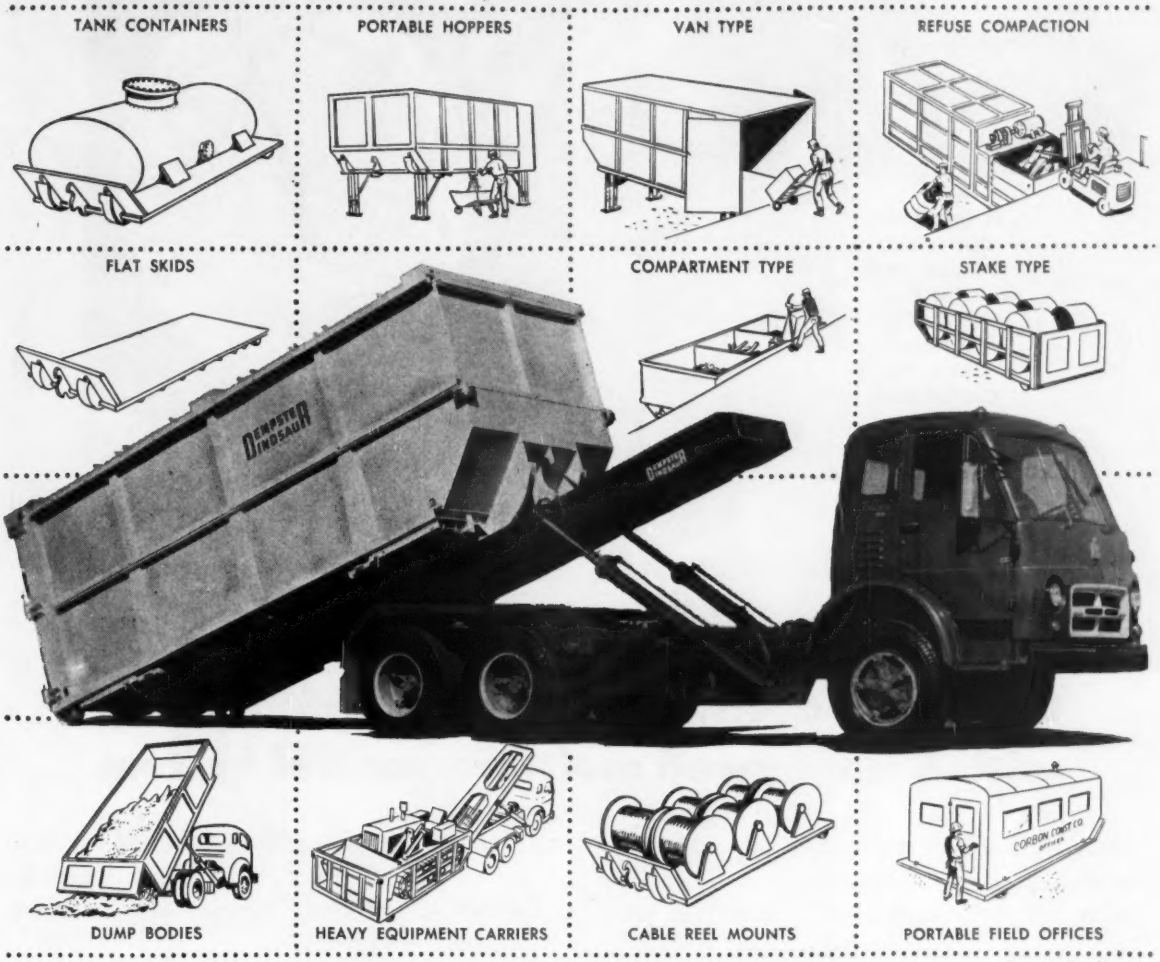
# One DINOSAUR With Detachable Containers Solves Many Complex Materials Handling Problems




Patents Pending

Here's the materials handling tool that takes up where the fork-lift truck leaves off. Gigantic loads can be placed on skids, in tanks or containers. The DEMPSTER-DINOSAUR picks them up . . . automatically . . . in seconds . . . and whisks them to their destination, in-plant or to over-the-road locations. Here they are put down, intact . . . pushed off on a dock . . . left on telescopic legs . . . or dumped.

One truck handles any number of containers of many types. Value of truck is multiplied . . . standing-idle time is eliminated . . . loading and handling is cut to the minimum. One man, the driver, handles the all-hydraulic operations without leaving the cab.

Containers available up to 40 cu. yds. and over . . . loads are limited only by the capacity of the truck. If you have a special problem send it in.

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Please send free Dinosaur Brochure

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THE *MOIST-O-GRAPH* HAS BEEN TESTED AND PROVED WITH THESE MATERIALS:

POTATO SHEET
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DRIED BEET BULB
BARLEY AND OATS GRASS
LIMA BEAN VINES
LINSEED MEAL
POTATO STARCH
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**HONEYWELL *MOIST-O-GRAPH*** measures moisture content from approximately 5% to 30% by resistance measurement, with a range of 0-100,000 megohms.

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 CIRCLE 34 ON READER SERVICE CARD

CIRCLE 35 ON READER SERVICE CARD→

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Vanilla Bean Flavor by Firmenich stems from the vanilla bean. By original research, its components and desirable characteristics have been isolated, identified, and synthesized. By patient and painstaking laboratory techniques, they have been reconstructed for you in a precise and potent flavor material with all the aromatic qualities of the original.

Vanilla Bean Flavor by Firmenich comes to you as an economical replacement of pure vanilla extract, of pure vanillin, or to use in combination in the manufacture of all products that you flavor with this most popular of flavors. Contains no coumarin.

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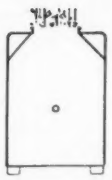
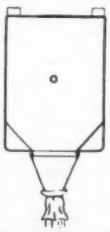
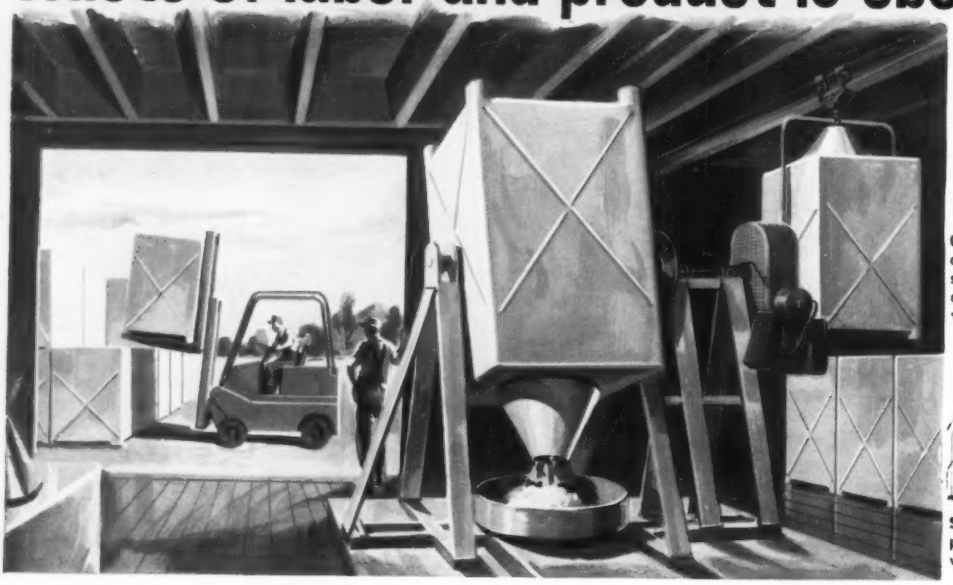


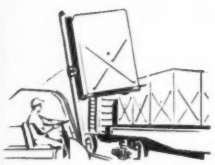
**Fills Fast**—22″ opening permits fast filling of powdered materials. Internal cone conforms to angle of repose of product.



**Empties Clean**—Internal cone funnels all materials out of bin. No residue remaining.

# Waste of labor and product is obsolete...





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Why continue losing time and money with old style disposable packages when this remarkable new Invert-a-bin* is immediately available on either lease or purchase. Write for literature today!

**THE POWELL PRESSED STEEL COMPANY**

HUBBARD, OHIO

**650 LISTEN** attentively as speakers and panelists present legal points and technical problems at Joint National Conference of FDA and Food Law Institute, November 16-17, in HEW auditorium, Washington.

# Know Your Additives Mess!

**Many vital points that may help you to avoid serious trouble come March 5 are covered in this FE report on FDA--industry session in Washington. Pertinent and disturbing comments from consumer representatives included**

SERIOUS additive problems, damaging food faddist activities, and need for more consumer education in nutrition were analyzed at an industry-government meeting in Washington, D. C., November 16-17.

No less than 650 food scientists and legal experts attended this joint national conference sponsored by the Food and Drug Administration and the Food Law Institute, Inc., to discuss common problems.

FDA officials kept the controversial and worrisome additives situation well in hand from the enforcement viewpoint. They presented a united front and were strongly supported by speakers representing consumers and home economists.

Well-informed men from the food, chemical, and packaging industries effectively explained serious additive problems and offered constructive suggestions. But they spoke in an atmosphere of FDA confidence and calm based on the law and consumer endorsement.

Unless industry actively pushes points made by its representatives, gains from the session likely will not amount to much. Yet FDA deserves credit for joining industry in a conference for mutual enlightenment.

**FRANK K. LAWLER**
Editor, "Food Engineering"

## FDA Preaches Law

Commissioner George P. Larrick frankly observed that the Food Additives Amendment still is in a shakedown period. Some problems have been solved, others not, and more enforcement activity is needed. The commissioner chided those engaged in food faddism, including food manufacturers who promote such products as fats and cereals with unproved claims. That kind of promotion debases the food supply, he pointed out, asking for industry's help in FDA's fight against dangerous faddism.

One of Larrick's assistants, J. K. Kirk, urged food manufacturers to know what they're adding to their

products, why they're adding it, what it does for the food, and whether it is safe. Labels on ingredient containers don't always give full information, he said, and therefore don't conform to the law. Some product formulas have grown like Topsy, and perhaps problem ingredients could be omitted without affecting quality. In determining safety, Mr. Kirk urged manufacturers to "go out and check." He also promised that FDA stands ready to help—a comment that drew laughter from the audience.

Problems have arisen in respect to some additives listed as approved, Mr. Kirk reported. Revisions have been made, six products being removed and minor modification made for some others. Food men were cautioned that sanction for use of an additive in a special way does not permit its use in other ways. They were warned, too, that FDA does not allow use of its name on labels except as legally indicated.

Admitting that FDA has been "a little slow" in answering inquiries, Mr. Kirk promised an extension beyond March 5 in hardship additive cases involving no hazard. Of course, a product would not meet this condition unless good information about its safety is available, so you can't count on an extension.

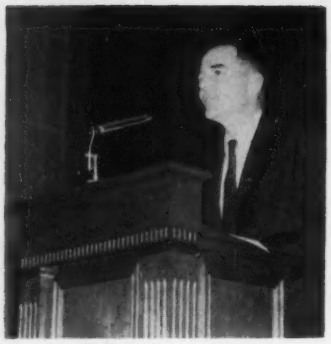
Mr. Winton B. Rankin, an assistant to Larrick, warned that FDA requires full compliance with the law for additives not generally recognized as safe. Proponents of an additive must determine degree of toxicity and safe quantities, show that the additive will achieve the intended effect, and indicate conditions under which it will be used. However, if the amount of an additive is so small as not to be significant under the law, then further study is unnecessary. Mr. Rankin made the point that chemical structure is not a reliable guide to toxicity, and no amount of any cancer causing agent is permissible.

Mr. Rankin reminded the industry to watch substances getting into a food from the package, from animal medicines, insecticides or other sources. DDT and penicillin are sometimes found in milk. FDA has concluded that its educational campaign alone will not stop this, so it has launched an enforcement program to clean up the country's milk supply.

Progress is being made in testing plastic packaging materials for safe migrating substances, Mr. Rankin reported. And safety tests on the wax used on cartons are continuing in the petroleum industry.

**B. L. OSER**

"Another need is an organized source to which industry can go for information on safety."



**RICHARD L. HALL**

"Information from our survey will be useful in getting changes made in food law."

**COMMISSIONER LARRICK**

"The Additives Amendment is still in a shake down period."

**DEPUTY HARVEY**

"That colors be harmless per se is unrealistic."

Doubt as to the safety of foods treated by irradiation was expressed in Mr. Rankin's closing remarks.

Legal aspects of the Additives Amendment were discussed by William W. Goodrich, assistant general counsel of the Department of Health, Education and Welfare. It is not necessary to "up-date" the forms used by suppliers in guaranteeing the suitability of additives to users, he said. However, mention of the Amendment might be added by the super-cautious.

Guarantees do not relieve the user of responsibility for his product or protect against seizure. They do enable him to avoid criminal prosecution under the law, and they protect the distributor.

Effects of additives and processing on the nutritional value of foods must be evaluated, according to Dr. O. L. Kline, director of FDA's nutrition division. Ethylene oxide, for example, affects several vitamins and amino acids. So its use must be demonstrated to be safe. Sodium bisulphite should not be used in thiamine-containing products, mineral oil may absorb fat soluble vitamins in the digestive system, and radiosterilization destroys thiamine and riboflavin, as well as other water-soluble viatmins to lesser extent. Trace minerals must be limited in foods, and a maximum use list will be provided, Dr. Kline said. That ion exchange may remove nutrients, and chelating agents put metals in a form that can't be absorbed through the intestinal walls, were other points.

So be alert, Dr. Kline warned, to any practice that will degrade the nutritional level of the food supply.

CHARLES W. KAUFMAN

"The packaging industry was not equipped to make the required toxicology tests."

KENNETH MULFORD

"Many food companies will be in a bad position unless Congress recognizes the situation."

That colors be harmless per se, as required by present law, is unrealistic, observed Mr. John L. Harvey, Deputy Commissioner of Food & Drugs. Proposed new color legislation will remedy that by providing tolerances, and it will apply to all colors, not just coal-tar colors. But not all colors will have to be certified. A point of controversy is the "cancer clause" in a House color bill. This clause, according to Harvey, does not mention zero tolerance. Another bill, passed by the Senate, omits this clause, and food technologists favor the Senate bill.

Mr. Harvey expects action in these bills in the 2nd Session of Congress.

I. J. HUTCHINGS

"It is hoped that the Amendment does not discourage researchers."

## Industry Speaks Up

Not all is sweetness and light between industry and FDA, as might have been implied by comments of FDA officials, observed Dr. B. L. Oser, president of Food and Drug Research Laboratories.

Additive tolerances involve a wide margin of safety. Over tolerance is a violation of the law, but not necessarily a hazard. The latter comes from over-tolerance for a considerable length of time, Dr. Oser pointed out—after being the first to mention cranberries at the session.

Needed to ease additive problems is a compendium of specifications, such as is available in the pharmaceutical field. Another need is an organized source to which the industry can turn for information on safety, in Dr. Oser's opinion. FDA goes to a large group of experts. Industry should be able to do likewise, instead of going to FDA directly, at least initially. A special science body, set up like the Food Law Institute or the Nutrition Foundation, would be a great help in handling additive problems.

Kenneth E. Mulford, chairman of the food additives committee of Manufacturing Chemists' Association, Inc., noted that it has taken FDA 12 months to prepare a "white list" of food additives. And inasmuch as the March 5 deadline for the Amendment can be extended for a year under the law, he urged Secretary Flemming to allow industry more time where there is no real question in regard to safety of additives. In fact, many food companies will be in a bad position unless Congress recognizes the situation and extends the date at which the Amendment becomes fully effective beyond March 5, 1961, Mr. Mulford warned.

Here are other pertinent points made by Mulford:

In respect to experts who judge whether an additive is recognized as safe, the law should be interpreted to mean experts on the particular additive and on tests to prove its safety.

The Delaney Amendment, added at the last minute involves political and emotional factors.

Development of common names for chemicals in foods presents a problem. An attempt to establish a set-up like American Standards Assn. fell through because of no sponsor.

Section 409B is not written in appropriate language in respect to the packaging materials problems. Because of analytical shortcomings, FDA should be satisfied with a method of measuring the amount of an "additive" in a food wrapper instead of requiring a test to determine amount that migrates into a food. This would automatically show the amount that could get into any food, and should be adequate if migratory studies have determined the maximum safe amount of contamination.

Changes in "indoor rules" by FDA may be just as serious to industry as changes in regulations, which emphasizes the need for close industry-FDA cooperation.

A rash of new state laws will be triggered by the Federal law, and these could be troublesome. MCA hopes that state legislation will conform to the Federal.

Suppliers of additives that change the color of foods—but not normally considered to be colors—should take a look at the color legislation. The definition of color means anything capable of imparting color.

Qualifications for experts used by FDA to judge safety of an additive were criticized by Dr. Imri J. Hutchings, manager of food research, H. J. Heinz Co., and president-elect of Institute of Food Technologists. Specific knowledge of an additive is required to pass on its safety, he observed.

Commenting on the problem of analysis, Dr. Hutchings pointed out that Heinz has been in business over 100 years, and yet is not able to completely analyze food products. This is not because of additives, but results from new elements that develop when natural food is processed.

The Heinz expert hopes that researchers won't be discouraged by the Amendment from pursuing new developments. Despite approval problems, Heinz will continue to work on the use of additives to avoid

spoilage. This would reduce the severity of heat treatment to only that required to protect health.

Troublesome problems with flavors under the Amendment were spelled out by Dr. Richard L. Hall, director of research and development, McCormick & Co. First problem has been to survey the use of flavors in foods. Such information is a necessary basis for petitioning for use regulations by FDA and to establish priorities in studying safety and developing analytical methods. Returns have been received from 66% of the companies, and results will be published by Food Protection Committee.

Information from this survey will be useful in getting changes made in the food law as needs develop—and they will—said Dr. Hall. The Delaney clause and the time limit are two aspects mentioned as in need of change.

Dr. Hall agreed with previous speakers that "expert" should be redefined as it pertains to those who judge safety. And he favored establishing a panel of experts to which industry may turn for opinion.

What constitutes "common use" also was questioned. Is it use in many types of foods, or in one large-volume product?

Here are several more challenging observations made by Hall:

Flavor analysis poses an extremely critical problem. Many analyses will prove impossible. When possible physically, some will not be feasible economically. The cost of testing and getting FDA clearance can't be justified for small-volume flavors.

What constitutes proof of safety varies.

In respect to safety under intended used, it is not necessary to guard against all conceivable stupidity.

For unreasonable "safety," several hundred foods will be dropped, and many firms will suffer—for little purpose.

The cancer clause reinstates the per se doctrine, and is not needed. Other provisions of the Amendment give adequate protection.

Under this clause, the question is not "is found to cause cancer in humans" but "may be found" or "could be found." And the recent interpretation by FDA in the cranberry case makes the clause much worse.

Industry should not leave the additive safety problems entirely with FDA. The industry has an enormous responsibility. It needs to achieve a new level of informed activity in the additives field.

Speaking as president of Packaging Institute, Charles W. Kaufman, director of research and development, National Dairy Products Corp., pointed out that the industry was not equipped to make the toxicology tests required. But given time, it can prove packaging materials to be safe.

He reported that PI has established a committee to aid the industry in making recommendations to FDA. This committee provides a focal point around which package suppliers can converge and provide common petitions to FDA.

In closing the industry session, Dr. Oser stressed the need for fundamental research in toxicology. Relatively little has been done, for example, in relating short-time tests to chronic, or long-time tests. Basic information of that nature might make it much easier to judge safety.

As for cancer, the finger of suspicion is more often pointed on flimsy evidence at food than at other agents.

Too many radical assumptions are based on inadequate knowledge. This problem requires a great deal of study, which could be a function of a National Foundation for the Promotion of Food Safety, if established, Oser concluded.

That food faddism is something for the industry to reckon with, was pointed out by Dr. Sipple, of Nutrition Foundation. This racket costs 10 million Americans over $500 million a year.

FDA conducts an aggressive campaign of enforcement and education to combat faddism. The FTC is active, the Post Office Department watches use of the mails to promote faddism, and the Better Business Bureau is on guard.

But control is difficult, Dr. Sipple observed, and food manufacturers must help combat food quackery by a continuous and vigorous campaign of education in nutrition. And nutrition should be worked into school education at the primary and secondary grade levels.

The Nutrition Foundation is extending its own educational program against faddism.

## Women Have Their Say

If FDA needed support after the cranberry fiasco, it got it from women participating in the meeting. And food manufacturers came in for criticism from the same source.

Sally Butler, legislative research director of General Federation of Womens' Clubs said that women look to FDA and the USDA as guardians of the nation's food.

And she made the following sharp points:

Additives are used indiscriminately, and food variety would be better achieved with herbs and spices. Women are amazed that anyone dare criticize HEW in discharging its duty to protect people against contaminated cranberries as required by law. It is enough for women to know that there is possibility of harm from cranberries.

Women are concerned about labeling. They have become aware of substitutes and read labels. They want more information, not less. They object to lack of details on labels for standardized foods, and the time will come when products with little on the label will be left on the shelf.

In general, the food industry is considered to be honest by the ladies, but they want enforcement of laws aimed at those who are unethical and unscrupulous, even if sometimes the innocent must suffer from such laws.

Constructive criticism that food firms may turn to their advantage came from Dr. Elizebeth N. Todhunter, dean of home economics, University of Alabama.

Said she: Consumers have been fed some facts, some partial misinformation, and some wrong information in popular media.

Labels sometimes are confusing in statements about vitamins and calories.

Four hundred units of vitamin D in a package of cereal is too much—a day's requirement in itself. Indiscriminate fortification can destroy confidence in foods—for instance adding vitamins, iron, etc., to milk in addition to vitamin D, plus pasteurizing and homogenizing the milk.

The food industry should so operate as to instill complete confidence in consumers. When, for example, a product does not live up to its label, other products are harmed thereby.

Poor quality, confusing statements, and misleading information are bad for the whole industry.

Industry should do something to

**PANEL OF EXPERTS** from FDA and industry answer questions at conference.

effect wider dissemination of useful information about food.

And don't forget that "food is for people."

"Consumers are down on what they are not up on," quipped Dr. Faith Fenton, who spoke for the American Home Economics Assn. She is professor emeritus of food and nutrition at Cornell University.

Only a few consumers are well informed, but their number is increasing. And they need to be well informed, what with the number of food products offered, Dr. Fenton commented. Labels can provide the best of facts for consumers.

Additional observations by Dr. Fenton were these: Common names of additives (not functional ones) are desired on labels. Allergists, for instance, need to know what's in the products, specifically.

Of course, it is a problem to find common names for more than 700 chemical additives, and costly. A combination of functional and common names is a possibility, and explanatory statements on labels should be considered.

Standardized products do not need statements of ingredients on the label. So those are the items about which women know the least.

Homemakers sometimes don't read labels because of the small type or arrangements that make reading difficult. Poor vision afflicts 60% of the people, and many more women than do should wear bifocals. It's time to evaluate what goes on labels. The homemakers' shopping job is not easy.

Fewer additives would please housewives. Cannot natural flavor and color be retained by colder storage, rather than additives?

Consumers respect natural foods, distrust food additives.

Speaking to the subject, "What Food Industry Thinks of FDA," E. K. Thode, vice-president and general counsel of General Mills, commented that enforcement legislation must advance to keep pace with trends. The industry has prospered under FDA, he said, and its policeman has also been a very helpful friend.

## Panel Answers Questions

Questions were answered by a panel of FDA officials and food scientists, led by moderator, Dr. William J. Darby, chairman of the Food Protection Committee of the National Research Council and director of nutrition at Vanderbilt University School of Medicine.

Here are some significant answers:

1. Once a safety test program is properly outlined, it will produce results. Therefore the cost of the test can be determined at the start.

2. When FDA approves an additive for one manufacturer, this constitutes approval for other firms when all conditions are the same.

3. Toxicity data are kept confidential. FDA will refer anyone who wants to see such data to the first petitioner.

4. Tests are better than history of safe use, because animal tests will reveal how close usage is to danger point. (Here Dr. Oser asked if the point isn't to prove safety, not to prove products harmful.)

5. That a product is generally recognized as safe is established by FDA in this way: When FDA is not sure as to how experts regard an additive, a proposal to recognize its safety is published in the *Federal Register*. This gives scientists the opportunity to say they disagree. Some 800 selected experts are on FDA's mailing list to receive such notices. Industry may ask FDA to propose regulations and get the reaction of experts. Or it can first contact a few scientists on its own, and then ask FDA to propose a regulation and publish it to get the opinion of its list of experts.

6. Safety is not determined by a few men with special knowledge, but by a large group of scientists familiar with what is generally recognized as safe.

7. Common use may be in several different items, or in one commonly consumed product.

8. The fact that no ill effects have resulted from long use of a product does not prove safety in respect to expert opinion, because the experts might know of tests on animals.

9. FDA's list of experts is available—but it is just a list of names.

10. In addition to the list of approved additives published in the *Federal Register* Nov. 20, another list of 70 is about ready. FDA has a list of trace elements, and of packaging materials. It will continue adding to its lists of safe additives.

11. Polyethylenes are not regarded by FDA as suitable for packaging fatty foods (in direct contact) at the present time.

12. A chemical food additive is not considered as a food by FDA in the sense that the manufacturer's plant will be inspected.

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NO SUBSTITUTE for going into stores and finding out retailer's most critical requirements.

MARKETING

# What a Trade Relations

**Called for are more mutual-help partnerships between manufacturer and distributor . . . You'll read here how Pet Milk smartly builds marketing success by promoting better communications with the trade and among its own key officials**

## Building Blocks of Better Trade Relations

Promoting mutual manufacturer-distributor action on certain trade practices is one area where an effective trade relations especially pay off.

Here's a handy checklist worked up by Grocery Mfrs. of America and six cooperating national distributor groups:

**Special Payments:** Advertising and promotion agreements should be covered by cooperative merchandising agreements. Payments for specific services and proof of performance should be defined. Provisions for all media should be made, and manufacturers should not be asked to pay extra money for participation in distributors' special events.

**Communications:** There's a critical need for improving information pipelines at all levels—between manufacturers and distributors, between top management of manufacturers and their department heads and front lines, and between distributor headquarters and store managers.

**New Products:** Presentations to buying committees should include samples for testing, and complete information regarding pricing, promotion, and advertising plans, and results of research and market tests.

**Salesmen:** Manufacturers' representatives must be upgraded from mere order takers (a function easily handled via phone or mails). They should by fully informed on products, prices, shipments, and promotions.

**Deal Merchandise:** Distributors want 4 to 6 weeks advance notice to give them time to clear out regular stock and plan tie-ins. To avoid underbuying or overbuying, manufacturers should plan with each distributor how much stock will be needed to justify the promotion.

**Promotions:** Pertinent information should be sent to the correct official in the distributor organization. Check to see whether it is the buyer, the sales manager, the advertising manager—or someone else.

**Point of Sale:** Distributors report they still reject a majority of this material. Find out from each distributor the kind of material he can use, when he wants it, and how he intends to use it.

**Transportation:** Analyze your pricing methods to make sure quantity differentials are pegged to spreads in delivery costs. Also, price differentials (that are in accordance with Robinson-Patman) should offer sufficient inducement to distributors to regulate their purchases in line with lowest delivery costs.

**Standard Invoice Forms:** In a uniform place, include all pertinent information—terms, discounts, quantities—so that accounts-payable clerk can process invoices faster. Where practical, attach bill of lading to invoice.

**Robinson-Patman Compliance:** Unfair discriminations or violations of R-P Act hurt concerns that operate within the law, do not promote sound growth, and are bad business. Unethical trade practices focus attention on getting or giving the "best deal" rather than concentrating on promoting larger consumer purchases.

**W. RAY HENRY**
Trade Relations Director, Pet Milk Co., St. Louis, Mo.

SPECIALISTS in trade relations have been variously described as (1) "listening posts" to learn about customer desires, needs, and criticisms; (2) as "spokesmen" to interpret company plans, policies, and activities to the trade. Each is only a partial definition.

Actually, the trade relations director may be likened to a telephone switchboard. He receives and transmits information and ideas. And he also makes direct connections between the manufacturer's organization people and the representatives of the grocery trade.

Pet Milk has, throughout its nearly 75 business years, regarded its grocery trade customers as "marketing partners". As the company grew in size and diversified, and as the grocery marketing system changed in scope and nature, there was increasing recognition of the need for a specialized trade relations division to help maintain a necessary close manufacturer-distributor relationship.

Grocery marketing, and changes in the distribution pattern, have whizzed along at rocket-like speed. During the past decade, retail grocery dollar volume increased nearly 100% while the number of retail grocery stores declined by approximately 25%. The number of retail chain outlets alone fell from 28,500 to 20,500 between '47 and '58.

### Fewer Do More

This shift is dramatically spotlighted by A. C. Nielsen reports. These show that, during the past 5

# Director Can Do for You

**NEED** to improve communications as two-way flow between manufacturer and distributor underscores growing importance of the trade relations director. Here, Pet Milk's Henry reports to management on customer needs and criticisms, then . . .

yr., mergers and acquisitions have reduced the number of chains from 273 to 77. But the drop in number has been accompanied by a growth in individual store and chain volume.

For example, chains with 11 or more stores now account for 39% of the entire retail grocery volume, while the rapidly growing affiliated stores—voluntaries and cooperatives—are doing 45% of the grocery volume. This represents a 16% increase in the share-of-market during the past 10 yr. On the other hand, the independents' share-of-market has declined to 16%.

**What does this mean to the grocery manufacturer?**

It simply means—according to the Nielsen data—that distribution in today's 44,500 largest retail stores results in product exposure to 70% of the consumer market. A decade ago it would have required distribution in 112,000 stores to gain the same exposure.

**Obviously, the decreasing number of retail outlets combine with an enormously expanded variety of food products to make the free exchange of ideas and knowledge between manufacturer and retailer imperative for their mutual progress.**

Assuring that this communication is effective by maintaining close liaison between manufacturer and distributor is the primary responsibility of the trade relations director.

Here are specific steps which the TR director takes to attain these objectives—

**▶1) Studies and interprets food trends, with special emphasis on attitude of the trade.**

**▶2) Keeps company management and marketing executives advised of trade relations findings and offers suggestions to aid them in their programming.**

**▶3) Maintains contact with representatives of the grocery trade to discuss and understand their problems, their needs, and their desires as related to the manufacturer's products, programs, and practices.**

**▶4) Explores and reports on the distributors' evaluations of the manufacturer's practices and policies, sales promotion activities, advertising, and other marketing materials and plans.**

**▶5) Advises the trade on company attitude and programs affecting their marketing activities.**

**▶6) Coordinates company participation in trade association activities.**

## Keep In Touch

Although these steps are outlined in relation to the trade relations director, they are not intended to be the agenda for a single individual or department. In reality, it's essential that the TR specialist bring many of the company's personnel into frequent and close contact with the trade.

Trade relations can never be a "one man show." Rather, success of a trade relations program is dependent upon company-wide philosophy and attitude.

Corporate management must be vitally interested in learning the feelings and problems of its customers, in welcoming their suggestions and

. . . goes out into the field to interpret corporate policies and objectives to trade gatherings, college classrooms, and consumer groups.

## They All Want to Know

Trade Relations Director W. Ray Henry tells this personal anecdote to underscore the growing interest shown in that title:

"For a period of 37 yr., I held a great many different positions and titles in the marketing organization of Pet Milk—and seldom did anyone ask me to explain my job. But in the little more than a year since I became Director of Trade Relations, virtually everyone I meet asks me to define my assignment.

"The question has been put to me so often that I've been tempted to print up a thumbnail description in card form. Like this—

> **The director of trade relations assists the company in gaining a better understanding of, and acquaintance with, the distributors' problems and the effects of our company actions on the business of our customers. . . . Also, he helps maintain contacts with other grocery manufacturers. And he studies trends and trade practices and counsels marketing personnel regarding them.**

"But this—as I've found in practice—would really only be the beginning. The field of trade relations is changing so rapidly that any definition would have to be altered almost daily to keep pace with the dynamics of the grocery trade."

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⅔ Jacketed, 80 to 300 gal.
Style A Kettle
⅔ Jacketed, 5 to 500 gal.
Style C Kettle
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STANDARD
or SPECIAL...
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LEE
PROCESSING EQUIPMENT
Lee facilities are highly adaptable to production of custom-designed equipment. Let us discuss your requirements with you.
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Style B Kettle
Full Jacketed, 10 to 300 gal.
Pressure Kettle
⅔ Jacketed, 40 to 200 gal.
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criticisms, and in applying these findings in the company's day-to-day activities.

In marketing, the basic job of an eflective TR program is to conduct a constant search for answers to these key questions–

1) **What are we doing right?**

2) **What are we doing wrong?**

3) **What things are we leaving undone which we should be doing?**

These are simple questions to ask. Getting the answers is highly complicated. And the real value of the TR program is acting on the answers once you have found them.

Although most of the functions are intimately related to the marketing program, there are also important phases of the work which are not directly connected.

## Get 'Em Young

For example, I have found myself spending time on various college campuses as part of my job. This is a reflection of the interest that universities are taking in the food industry–both as a part of their classroom curriculum and through seminars sponsored for representatives of the food trade.

In talks before such groups, I find keen interest in every phase of food marketing, from product space allocation to the influence of margin and turnover on profits. This kind of participation is, in my opinion, not only important to trade relations, but also to development of qualified future personnel for the food industry.

The fact that the TR programs function outside the normal sales-customer relationship affords other opportunities for exchange of experience and mutual assistance for the benefit of manufacturer and retailer.

Many of grocery trade people, for example, show sharp interest in facets of our Pet Milk's operations other than products and marketing. We get numerous requests for material and information about our management development program, which retailers feel might be useful to them in their own personnel work.

The swift-moving changes in our industry buttress the conviction that future progress depends upon a collaborative approach to problems affecting retailers, wholesalers, and manufacturers alike. And development of an effective, mutual-help trade relations program in the food industry will contribute greatly to the attainment of that objective.

—*End*

## *GMA Meeting Told:*

# Clean House Is Boom Insurance

**With new growth decade around the corner, marketers spur drive to ward off bigger government police role**

GROWING CONCERN that the glittering '60s don't offer the food industry a blank check for continued growth highlighted last month's annual meeting of the Grocery Mfrs. of America in New York City.

There was a strong undercurrent of feeling that, unless the industry checked unwholesome trade practices on its own, much of the decade's promising opportunities might be cancelled by stiffer government intervention.

**Whereas a year ago private labels dominated the talks, this year the over-riding concern was ethical trade practices. In fact, the scant mention given to PLs underscored Washington's lengthening shadow over food industry's trade practices.**

This prospect of more government policing was reflected in the meeting's opening day when the ethics problem was tackled from two directions—a warning by FTC's Chairman Earl W. Kintner that unless the industry "cleans house" the government will do the job, and the issuance by GMA and six distributor associations of a set of recommendations on trade practices.

It was no coincidence that the recommendations, on which GMA has devoted years of work, appeared the same day Kintner spoke.

The FTC chairman dramatized the extent to which industry problems have caught government attention with sharp figures: The commission's food work at present involves some 125 restraint-of-trade inquiries, 12 probes into deceptive practices, 36 complaint actions, and 31 cease-and-desist orders (fiscal '58-'59), plus 260 anti-monopoly cases.

### Can be Simple

Acknowledging that changing business conditions complicate interpretations of Robinson-Patman Act provisions, Kintner insisted, nevertheless, that the Act's "basic concepts can be understood by any businessman. Basically, the Act requires a standard of fairness to all and favor to none."

The chairman indicated he'd prefer to see FTC and the industry work jointly to bring about better compliance with R-P. Along this line, FTC has set up a special 10-man task force, recruited from the commission's "younger, most able executives."

A key assignment of the group, Kintner disclosed, will be to come up with suggestions on how the Act "might be more plainly and forcefully interpreted . . . and the law more effectively administered." There's a two-fold objective here: (1) To develop staff guides that will offer clear, concise illustrations of what the law permits and forbids, and (2) to spread awareness of the Act's provisions.

The long litigation that ties up FTC complaints tends to weaken enforcement. Rather than just sit by and wait until the violation has taken place, FTC hopes that more reliance on education and moral suasion will halt unfair trade practices before they reach formal action stage.

How successful the move will work out will be an interesting thing to watch during the next few months. For interpreting R-P provisions has always been a ticklish matter, and there are as many differing opinions as there are lawyers.

And, as Kintner recalled in his own talk, a previous attempt to make such interpretations a part of the 1952 trade practice rules for the grocery field was beaten down.

Kintner warned that the task force idea didn't mean any let-up in FTC's enforcement policy. As if to back this up, the Commission last month alone slapped new complaints against Continental Baking and Huber Baking (for alleged discriminatory discounts), Bercut-Richards Packing (alleged discriminatory promotional allowances), and Smith Grain, Alexander Smith Inc. and Heard-Kinard-Smith (alleged receipt of illegal brokerage payments). Also, it held hearings on charges involving National Sugar Refining, National Bakers Service, and Venus Foods.

Promoting ethical trade practices in any industry involves a lot more than compliance with R-P. That's because there are many facets of buyer-seller dealings not covered by law—coupons, for one.

With this factor in mind, the set of recommendations unveiled by GMA and cooperating groups cover both the legal and extra-legal areas of ethical trade practices. Participant groups include: Cooperative Food Distributors of America, National Assn. of Retail Grocers, National-American Wholesale Grocers' Assn., National Assn. of Food Chains, Super Market Institute, and the U. S. Wholesale Grocers' Assn.

Probably the most talked-about section of the recommendations cover payments for advertising and promotion services. This is the delicate area which has sired many of the malpractices prevalent today, as well as ruffled manufacturer-distributor relationships.

As a first step, GMA Pres. Willis urged that the older "cooperative advertising" be replaced by "cooperative merchandising agreement." Such CMA agreements should define payments for specific advertising and promotion services, provide for evidence of performance before payment is made, and be broadened to include all media.

Willis expressed the hope that the step "should mark the end of the 'loose cooperative advertising dollar' with its questionable legality and low return per dollar invested."

### A Heady Brew

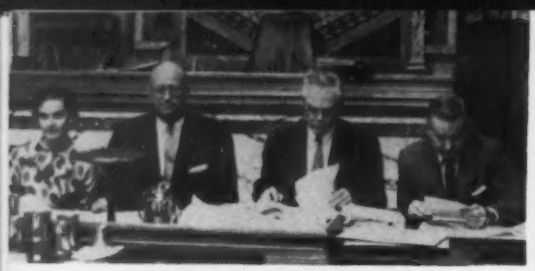
When the talk switched from ethics to the industry's future, rosy predictions of climbing sales became the speakers' trademark.

Exec. V. P. James Peckham, of A. C. Nielsen Co., saw grocery store sales soaring 56% from $48 billion in '59 to $75 billion in '69.

Editor Robert Mueller, "Progressive Grocer," forecasted food store volume of $80 billion by '70.

—*End*

**THAYER C. TAYLOR**
Associate Editor, "Food Engineering"



"BASIC ACCUSATIONS mean we have a near-monopolistic condition," said Committee Chairman James Roosevelt (D., Calif.). Seen (l. to r.) are: Miss Jane Hicks, research analyst; Roosevelt; Everette MacIntyre, general counsel; and Arch A. Moore, Jr. (R. W. Va.).

"IT'S TIME for complainants to put up or shut up!" declared Representative Moore in pointed summary at close of hearings. Thus he spotlighted the failure of the committee to get substantiating evidence.

# 'Fact-Smog' Snaffles Probe

**Lack of solid evidence handicaps Roosevelt inquiry. But buyers and processors learn each other's secrets.**

IF ONLY ONE important fact resulted from the House Small Business Subcommittee's follow-up hearings on distribution problems, held in San Francisco Nov. 9-12, it would be that valid, substantiating evidence must be presented before this body can act.

**"The basic purposes of this investigation were fulfilled by the record made during these hearings. However, it would have been far more successful and complete had we received the voluntary cooperation of the industry—especially processors."**

On this paradoxical note, Chairman James Roosevelt (D., Calif.) gavelled the hearings to a close.

The danger flag is flying for the industry if the reason for lack of cooperation is the fear of reprisal for testimony, Roosevelt added—danger not only to processors but to producers and public as well. If this condition exists, it's time for this committee, or other Congressional committees, to find ways and means to pinpoint it.

The very economics of buying prove that even the biggest California Street buyers want to keep as many good processors in business as possible. This is the key to their bargaining power.

But, this is a two-way matter. Because, while some processors agree that buyers do want to keep them in business—but just barely in business—they, too, can rely on safety in numbers.

This is not a case for individual action. If a valid complaint exists, then it should be supported by all those aggrieved. The alternatives—as implied by Roosevelt—may be the enactment of Federal legislation that could effect individual marketing freedom. Or it could result in no action at all.

Because retaliation against a processor may subtly occur in many ways not easily proved (despite committee assurances of protection), it's not surprising that only one working witness disregarded this danger. A Salinas, Calif., grower-shipper condemned mergerism, and as a remedy he suggested legislation limiting chains to 100 retail units ($1 million each). And critical of one chain's fresh-producing buying methods, he labeled these retailers as "monsters". But he praised a competing chain.

Max Rosenthal, California ex-canner, condemned all chain buyers and declared that "Nobody pays any attention to the Robinson-Patman Act." The Committee may not agree with this opinion, but it is in the record for further study.

It may have been this callous disregard for law that caused Committee Member Arch A. Moore, Jr. (R., W. Va.) to remark later that both buyers and sellers seemed to be operating in the "shadow of the R-P Act." Furthermore, it could be the basis on which Roosevelt predicates need for strengthening old legislation and perhaps enacting new measures in an effort to control abuses.

It takes two to negotiate a price—buyer and seller. And, having been directed (at the preliminary San Francisco hearing, FE Nov., p. 46), to produce price flow-charts, buyers and sellers automatically became partners in each transaction. Hence, the spotlight shifted to include sellers as well as buyers.

Flow-chart items were: Cling peaches, tomato catsup, frozen spinach. Data required: From whom purchased, price, and date, plus shipping date, and price when shipped. In addition (and evidently unknown to witnesses), the Committee had secured from wholesale grocers some 50 affidavits in which the same data, plus allowances and some retail prices, were listed.

Highlighted before daily S.R.O. audiences of top growers, canners, brokers, and buyers, the public disclosure of some of these data was embarrassing to both buyers and sellers. For here was *prima facie* evidence—facts on prices and allowances that could be obtained in no other manner. As Harris Dodd, California street buyers for Colonial Stores, capsuled it: "I've picked up a couple of real lu-lus from the data."

## Set-Asides Studied

Testimony to the contrary, it is well known throughout the industry that, with exception of large, national brand canners, the set-aside or reservation buying method is far less than satisfactory.

As an example: Introduced for the Committee record were 1958-'59 set-asides and shipping orders for #2½ cans of Cling peaches reserved by A. G. Paxson of American Stores.

His set-asides with four canners totaled 27,250 cans. However, but 18,102 cans were shipped, for an average of 66%. So unless his suppliers could not deliver on order, or cut back the set-asides, they had to find a new home for 34% of these reservations.

More reasonable were the shipments—91.7%—against set-asides of Cling peaches claimed by Regent Food Co. (Safeway Stores, subsidiary).

**Seemingly undaunted by the discouraging results of the hearings, Roosevelt said that the basic accusations still mean that we have a near-monopolistic condition that could potentially become truly monopolistic.**

He said his staff still has various studies to make—both from evidence received during hearings and that gleaned from investigations in the field.

—*End*

**C. R. HAVIGHORST**
Senior Associate Editor, "Food Engineering"

# MARKETING SIGNALS

## Remote Control Warehouses

A computer in a centrally located service center that "runs" regional warehouses may be the next biggest step in cutting distribution costs. That's the idea Pillsbury's Distribution Director W. H. Gribble tossed out at a recent American Management Assn. meet.

Later, Gribble told FE, "We must find a way to automatize physical warehousing beyond the fork lift-pallet stage." Roughly, Gribble's proposed setup would work like this: Records function of warehouse, including code for specific storage location of each item, would be "inventoried" by computer. Automatic handling devices, receiving "instructions" via tape from EDP unit, would either route palletized loads to proper locations or pick out customer's order.

Conceivably, such a warehouse could be located next to a manufacturing plant, Gribble says. But he feels it's more likely that current regional warehousing patterns will be perpetuated. (See also article "Automatic Warehouse," p. 88.)

## FE's 'Better Meals' Shot Hits Mark

As predicted here (FE Aug.), food manufacturers' support of the newspapers' "Better Meals" drive in September didn't match the dailies' enthusiasm. Although 977 newspapers in US and Canada chipped in, grocery products advertising for the month showed practically no change from '58 level.

However, Bureau of Advertising plans a repeat next year, feeling that experience gained this time and longer head start will firm up chances for success. And, BofA points out, polls show that 62% of public heard or saw promotion's "Better Meals Build Better Families" theme.

Significantly, beverage advertising jumped sharply—reflecting start of Florida Citrus Commission's special $3.3 million blast for frozen orange juice. That drive, by the way, helped boost share-of-families buying the product to 26.9%, vs. 24.0% in '58.

## GF Expands Instant Frozens

Freeze-dried foods shape up as one of the key trends for the '60s, GF's Bd. Chrmn. Charles Mortimer told last month's GMA meeting. Suiting action to the word, GF jumped into the instant potato sweepstakes with a freeze-dried version.

Company says process eliminates need for chemical preservative found in shelf-type varieties. Sensing a big market for the item, GF has dropped its conventional quick frozen whipped potatoes.

At the same time, company stepped up its frozen baby foods (also freeze-dried) with a new pilot plant next to its Albion, N. Y., research lab. Move is a prelude to adding items and expanding distribution.

## New Challenge for Meat Packers

Meat marketers, still going through the pangs of a major readjustment to distribution changes, may soon find themselves wrestling with another headache—more government intervention via livestock supports and marketing orders.

This prospect was hinted at in a recent talk by Bushrod W. Allan, chairman, USDA's outlook and situation board.

Citing the close relation between livestock and feed grain prices, Allan contends that "if we lower feed grain price supports to reduce government costs, and fail to adjust livestock production to needed levels, feed and livestock products generally will be cheaper on the farm." This, he says, won't be "looked upon with equanimity" by livestock producers who are aware of support programs for other "basic" crops.

## Where Will They Eat Tomorrow?

As marketers seek to expand their knowledge of individual eating habits, sociological factors become more important. One such social question that's being depth-probed is whether feeding the mass market will become less a home function, more an institutional one.

This question is raised by Dean McNeal, Pillsbury's executive v.-p. He reasons, "As Americans become more mobile, travel, and leisure conscious, with greater disposable income, there will be continued increase in the rate of institutional feeding. And food marketers will have the challenge of making the transition from a largely consumer-oriented business to a suitable institutional-oriented one."

## BRIEFS

**Proof of fruit juice blend's boomy popularity:** Dole's versions, unveiled 2 yr. ago, already account for 12% of firm's sales, reveals Pres. H. C. Cornuelle.

**Operation of franchised restaurants** will be pushed by Schrafft's in move to expand business beyond N. Y.-New England area, open new outlets for retail sales.

**Broad-gage dehydrated food program,** launched by New Products Council, Chicago, aims at curbing high process costs. Food firms are invited to serve as sponsors.

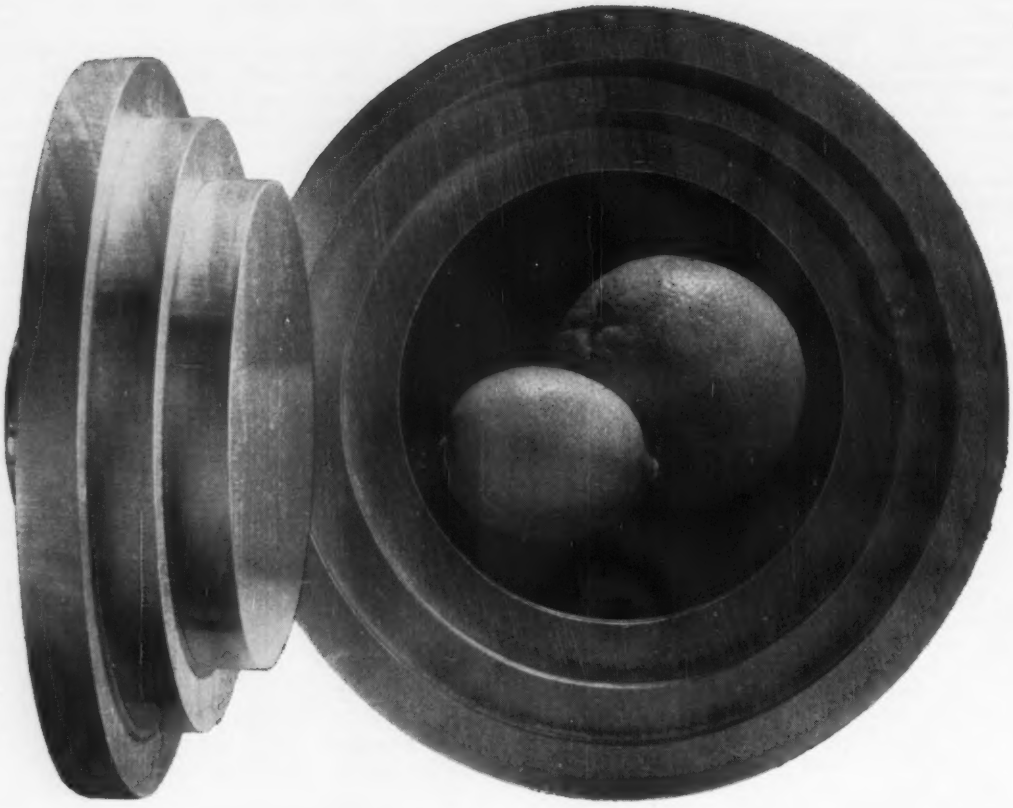
**National Sandwich Month** last Aug. got record retailer ad support ($142,237), says Wheat Flour Institute.

**Captive market idea** is being tried out by Convenient Food Mart, which plans to open string of bantam stores. Regional franchises will be given to food firms.

**Steak certificates,** used same way as department store gift certificates, are being pushed by Calif. Beef Council to promote holiday meat consumption.

**Premium-price instant coffee** will be marketed in Canada by Minute Maid following recent purchase of Tenco.

**Canned food sales** will reach $3.6 billion this year, frozen foods $1.9 billion, says Campbell's Pres. W. B. Murphy.



# HELP YOURSELF TO OUR MOST EXPENSIVE RESEARCH

Have you a "good" product you'd like to convert into a superior one? A processing problem? An idea for a new product that doesn't quite come off?

Call on Sunkist citrus research for help.

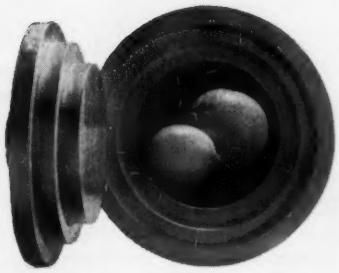
We've been working 44 years squeezing new uses and products out of California oranges and lemons. The payoff has been 118 U.S. Patents...and over 400 new products.

Exchange

All this "know how" is at your service. Sunkist technical men will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research laboratory. Write, and a Sunkist man will call on you.

## Sunkist Growers

PRODUCTS SALES DEPARTMENT



# CAN LEMON JUICE DO A JOB FOR YOU?

If you're a food processor... fresh, frozen or canned... fruits and vegetables... fish or fowl... lemon juice can do *at least* one thing for you:

- It can prevent or retard off-flavor tendencies...
- Maintain and even enhance natural food flavor—keep food fresh-tasting longer...
- Prevent oxidation, preserve color, texture and flavor during and after processing...
- Adjust acidity in low-acid foods–retard enzyme action...
- Replace salt in low-sodium diet foods...

And that's only a beginning. The list of jobs lemon juice can do is an extensive one.

If you're not using it... you may be letting the competition get a lead on you. Don't market a product that's merely "as good as" the rest. Exchange Brand Concentrated Lemon Juice—made by Sunkist—can often make it superior for only a penny or two—and add a selling ingredient of distinction to your label.

Why not let your Sunkist man talk it over with you?

The address: Sunkist Growers, Products Sales Dept., 720 East Sunkist Street, Ontario, Calif.

# Profits From Brand Switching

*From files of National Consumer Panel of Market Research Corp. of America. Material is factually correct. Identities of products and companies have been masked to insure anonymity.—Editor**

**MARKETING CASE HISTORY OF MONTH**

**Management's problem**

WE ARE faced with a situation where one of our products, an established high-profit specialty, seems to be losing business to one of our other brands—a lower-priced, less profitable item made from "substitute" ingredients. First-echelon research indicates that sales of the substitute product are increasing to approximately the same extent that volume of our "quality" specialty is decreasing.

Our problem: If sales of our established product are being lost to the substitute brand, should we continue to market the second brand?

## WHAT WOULD YOU DO?

**Management's decision**

First, we sought to determine the extent to which users of our established label had actually switched to substitute brands. This was accomplished by examining the diaries of the 6,000 families of the National Consumer Panel who report weekly on their purchases of selected food and household products.

We studied the purchase histories over a 2-yr. period of all families who had bought our quality brand during that time. We were thus able to see how many continued to buy it, how many tried substitute products, and how many became steady buyers of substitute items.

The former buyers of our quality brand were then further divided according to the particular brand they were currently using.

**Result of action**

As a result, we learned several key facts that shed new light on the entire situation. For example:

1. Customers of our quality product who formerly purchased it at regular intervals remained loyal, for the most part.

2. Those who purchased the brand less frequently, along with once-in-a-while users, were leaving the quality product in increasing numbers and buying the substitute items.

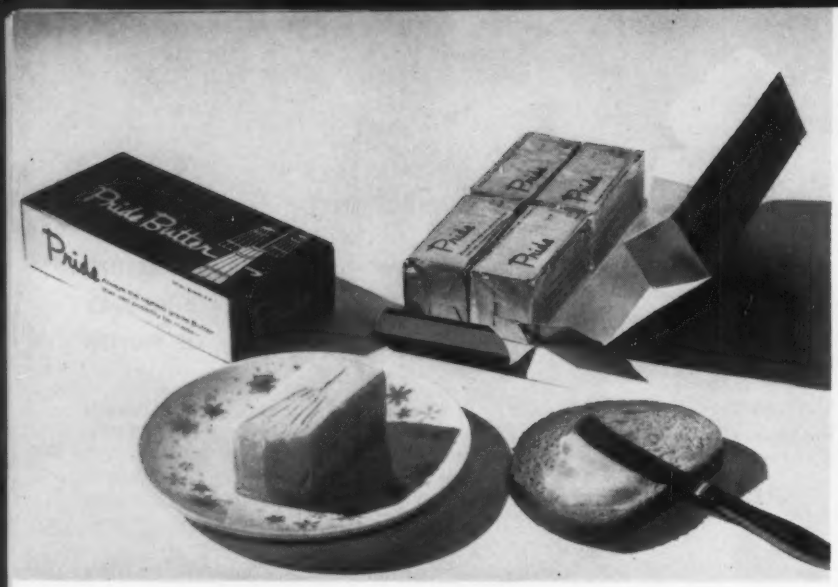
3. A substantial number of customers were being attracted to the lower-priced versions (including our own substitute brand). These purchasers had not bought our quality item at all during the 2-yr. period.

4. Former customers of our quality specialty who switched to substitutes divided their volume among several competitive brands and did not confine their purchases to our low-priced entry.

In short, we saw that a new "price" market was growing rapidly in this product category and would continue to expand whether or not we marketed a low-priced brand of our own.

Acting on this information, we decided to continue marketing the substitute product. In fact, we began promoting it more heavily to establish it firmly in its price class.

* For more information, write to FOOD ENGINEERING, 330 W. 42nd St., New York City 36.




DOUBLE PROTECTION: Quarters are foil-overwrapped, then packed four to a foil-laminated carton. Note repetitive use of churn symbol (suggestting old-fashioned flavor) on wrappers, carton, and chunky butter sticks.

# $R_x$ for Ailing Product: New Quality,

**"Butter can make a better showing against the low-priced spreads!" And bent on proving it, Chicago company offers newly attractive "cold-spreadable" product, double foiled for extra protection**

GIVEN THE TOOLS home-delivery milk dealers can "run with the butter ball," in the opinion of H. C. Christians, big Chicago butter house.

And to supply just what's needed, this company, through its Trend Associates Div., has activated a "4-P" program—new product, packaging, promotion, and pricing.

Behind the move is its belief that home-delivery dairies need a more flavorful butter, packaged to show that the superior product justifies higher pricing, promoted in a manner to "put it over," with enough profit incorporated to give salesmen a strong incentive.

Here, sharp product and consumer researching has shaped up a hard-hitting, integrated project featuring—

. . . **A truly different butter,** prepared from fresh sweet cream, cultured to provide deep-bodied, farm-churned flavor.

. . . **Convenience appeal,** through achieving improved spreadability even when product is cold.

. . . **Double-foil packaging** (foil-wrapped quarters packed in foil-waxed-paperboard carton) to safeguard freshness and flavor.

. . . **Carry-through of prestige-identity,** by use of old-fashioned churn logo, embossed on quarters, also printed on wrappers and cartons.

. . . **A break with traditional pricing,** making butter more profitable to seller.

. . . **National distribution,** handled exclusively through home-delivery dairies and backed by consumer guarantee.

Result: A totally new product from the creamery on up—"Pride Butter"—and an exclusive brand for the home-delivery to build on.

## Miss 94% of Market

Need for a strong rally has stemmed from the failure of butter sales to keep pace as our population mounts (per capita usage dived from 17.0 lb. in '40 to 8.4 lb. in '58).

Sales by dairies making home deliveries have specifically lagged. The average 300-customer route has been selling only 30 lb. of butter a week. Yet the average family consumes about 1¼ lb. per week, so the 30 lb. represents only 20 families—meaning that the average home-delivery dairy sells butter to only 6% of its market.

Why: For one thing, margarine has made substantial inroads into the spread market. Margarine people spend more money promoting their contract—$17 million last year, compared to $1 million for butter. And dairies are now even carrying margarine (some of dairy grade).

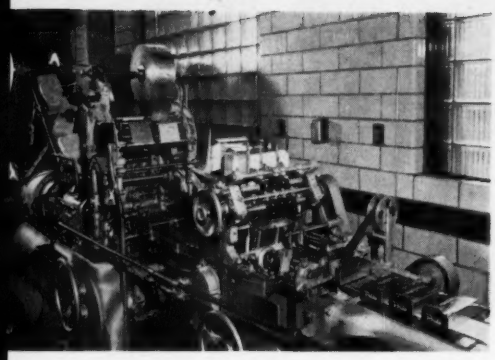
It's Trend Associate's belief that the type of butter sold today contributes to the product's dismal sales picture. Top grade butters have tended to become bland—thus posing less difficulties for those makers of economical spreads who attempt to match the flavor.

Also, butter labors under a pricing structure tied to a fluctuating national market. This structure accents low profit margins that leave very little for energetic promotions.

In addition to margarine, products like cottage cheese, fruit drinks, and chocolate drinks have cut into butter sales. They, too, have been heavily promoted.

And on top of this, the average

**Creating The Package**



**ACTION CLOSEUP** of automatic forming, over-wrapping, and packing of the butter into the new cartons. Machine is a Lynch Morpac.

**NATIONALLY DISTRIBUTED** butter package is sold exclusively through home-delivery dairies with money-back guarantee. Move is designed to tap non-user market, offset chains' broad margarine drives.

# Convenience in Prestige Package

routeman isn't prepared to sell butter. There's a strong need for upgrading routemen's knowledge of butter—especially on how to sell it.

Then, too, price competition from booming supermarket chains has seriously affected the growth and business of the retail dairies. The American Dairy Assn. reports 70% of the families in this country buy butter. Yet, the home-delivery dairies have permitted supermarkets to lure away this impressive butter sales potential.

A recent ADA survey points to *prestige* as the housewives' most powerful motivation to serve butter. So, Trend figures, if it's this that the housewives want, then they ought to be given more of it.

Present butter marketing, of course, relies on a certain degree of prestige—the fact that the product is the higher priced traditional spread, and is a pure dairy product. But Trend decided there was a lot of room for building more prestige into butter, its packaging and promoting.

## Container Does It

"Pride" label butter, it contends, is superior to the bland product. It's processed in a new way to give it the full-bodied flavor reminiscent of the days of the old hand churn. Too, its consistency and texture provide a new "cold-spreadability" that the traditional butter hasn't possessed.

Lifting the product's quality to the high prestige level was basic. Next came the double foiling for new protection (keep good flavors in, off-flavors out)—the all-foil prestige package.

Carton—foil laminated to waxed paperboard—is a western flat (Marathon), an ideal shape for home delivery. It's color-enhanced (combining a deep brown, gold and white) and contains four gold-foil wrapped quarters.

Furthermore, packaging is so integrated that butter doesn't lose its identity from creamery to table. "Pride" script and churns appear on carton and wrappers. And the churns are embossed on the quarters—attractively by indicating that the housewife's serving butter.

Size of the quarters is distinctively different—shorter and thicker than conventional Elgin type butter sticks. Experience shows, says Trend, that chunkier quarters increase consumption about 10%, because more butter is sliced in a patty of normal thickness.

To stimulate sales, Trend offers the prestige package for exclusive distribution (as a competitive advantage against chain stores) through home-delivery dairies. And the product is backed by strong tie-in promotions that feature an introductory offer, and written guarantee.

**Introductory offer**—to build consumer interest, a free pound of Pride butter is offered to the customer (provided she agrees to purchase four pounds at the regular price during the following 30-day period). This offer is self-liquidating to the route salesman, whose free-pound investment is returned during the course of the 4-lb. standing order.

**Written guarantee** – Money-back certification to customers states: "If you don't agree Pride is the finest butter you have ever tasted, your full purchase price will be refunded upon presentation of the unused portion and the Pride carton."

**Additional sales aids:** Among these is a customer booklet introducing and explaining the new product. It also makes the free 1-lb. offer and contains the written guarantee.

## Gives the Facts

Another aid is cooperation by Christians' personnel in the staging of routemen sales meetings by the dairy sales departments.

Covered at these meetings, in which routemen receive a promotional kit, is all the basic information —how the butter is made and graded, the special excellences of "Pride" butter, the sales story, deal, etc. The promotion kit includes newspaper ad proofs, sales posters, truck cards, etc.

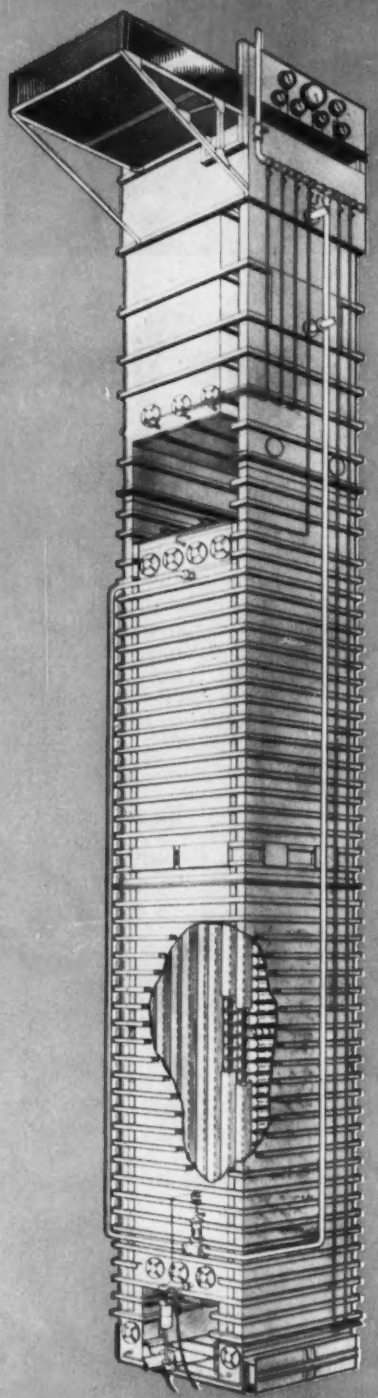
The attractive pricing structure—breaking from tradition—gives dairy retail outlets a more substantial profit. Product is priced at 71¢ per lb. to the dairy, with recommendation that it be retailed for 84¢ (about 2¢ higher in western states). And the butter will sell at one price throughout the year, precluding fluctuations.—*FE Staff.*



CIRCLE 52 ON READER SERVICE CARD→

# Now, from France, for your plant and profits

# . . . a sensational (and proved) saving step in canning!



For a long time, continuous pressure cooking and cooling presented many problems in mechanics and heat exchange. *But now, a revolution from France!* Introduced just a few years ago, the genuine CARVALLO hydrostatic continuous cooker and cooler has been constantly tested, refined and improved. Today, it is considered the finest unit in the world, matching your own product quality standards.

**Only the genuine CARVALLO hydrostatic pressure cooker-cooler gives you these exclusive features...**

1. **Preheating and Cooling under Integral Counter Flow** saves up to 80% in steam and cooling water.
2. **Fully Automatic Self-controlled Unit,** directly coupled to seamers and labelers or casers, saves 100% in processing labor.
3. **Specially Designed Chains** are rugged, durable. Do not stretch or wear. The end of the carriers are closed by the chains, preventing jamming and lateral friction and damage to the cans and jars.
4. **Hydrostatic Controlled Pressure** insures an absolutely constant temperature during sterilization, eliminates transfer valves and all their troubles. Pressure variations inside and outside of cans are progressive! No exploded peas! No clouded juices! No leaking seams!
5. **Tubular Carriers Unattached to the Conveying Chains** — the same unit can process, without any change parts, cans, jars or bottles in a wide range of sizes and shapes. No jamming through dented cans or broken jars. Easy automatic loading and unloading. Carriers can be removed very quickly for yearly inspection.

*Air mail or cable...*

**MAISON FRÉDÉRIC FOUCHÉ**

**8, Rue Eugène-Varlin, Paris 10, France**

# CAST POLYETHYLENE FILM PACKAGES IT BETTER...FOR LESS!

**In a single year, cast polyethylene film has become a major food packaging material. Frozen food, produce, bread, meat, dairy products, candy . . . even tortillas and tamales are now packaged in clear, tough cast polyethylene film. Here's why cast film offers you a better packaging material for your money:**

**CRYSTAL CLARITY** — PETROTHENE® Cast film has an appearance equal to or better than that of other commonly used transparent packaging films. What's more, it has a soft, natural flexibility that does a better job of packaging bulky or irregularly shaped food products.

**SUPERIOR PACKAGING PROPERTIES** — PETROTHENE Cast film has good impact and tear strength, high grease resistance and is an excellent moisture barrier. It heat seals well and is easily printed. Cast film handles well in packaging machinery designed for conventional polyethylene film.

**ECONOMY** — You pay less for cast film than for other highly transparent packaging materials — whether you figure costs per pound or per unit area of film. It is the most inexpensive high-clarity overwrap material you can buy.

**Cast polyethylene film is made by a special process employing U.S.I. PETROTHENE resins. Production of cast film by extruders has expanded rapidly since the process was introduced by U.S.I. last year. Facilities are now available to meet rapidly growing demand. Ask your film supplier about the special advantages of cast film for your packaging needs.**

**U.S.I. INDUSTRIAL CHEMICALS CO.**
Division of National Distillers and Chemical Corp.
99 Park Avenue, New York 16, N. Y.
*Branches in Principal Cities*

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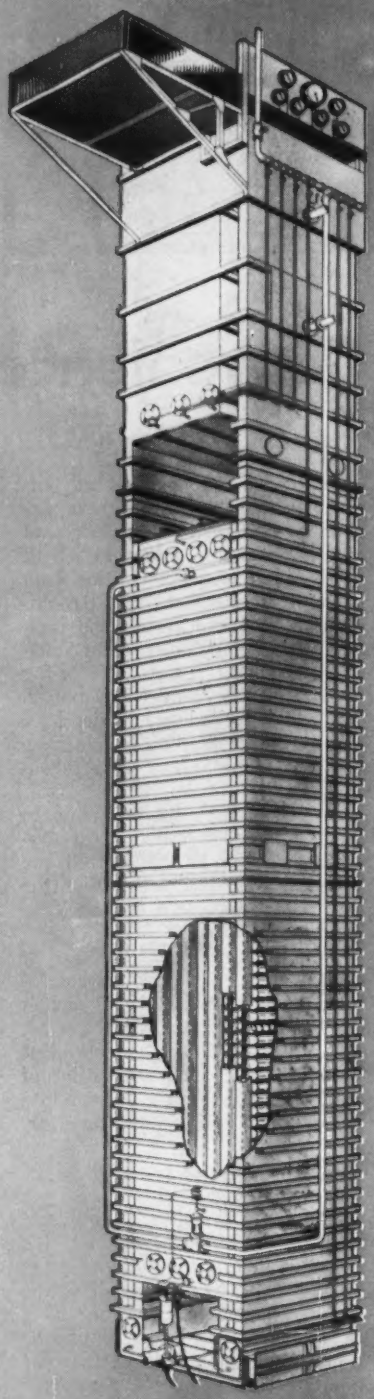

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*Air mail or cable . . .*

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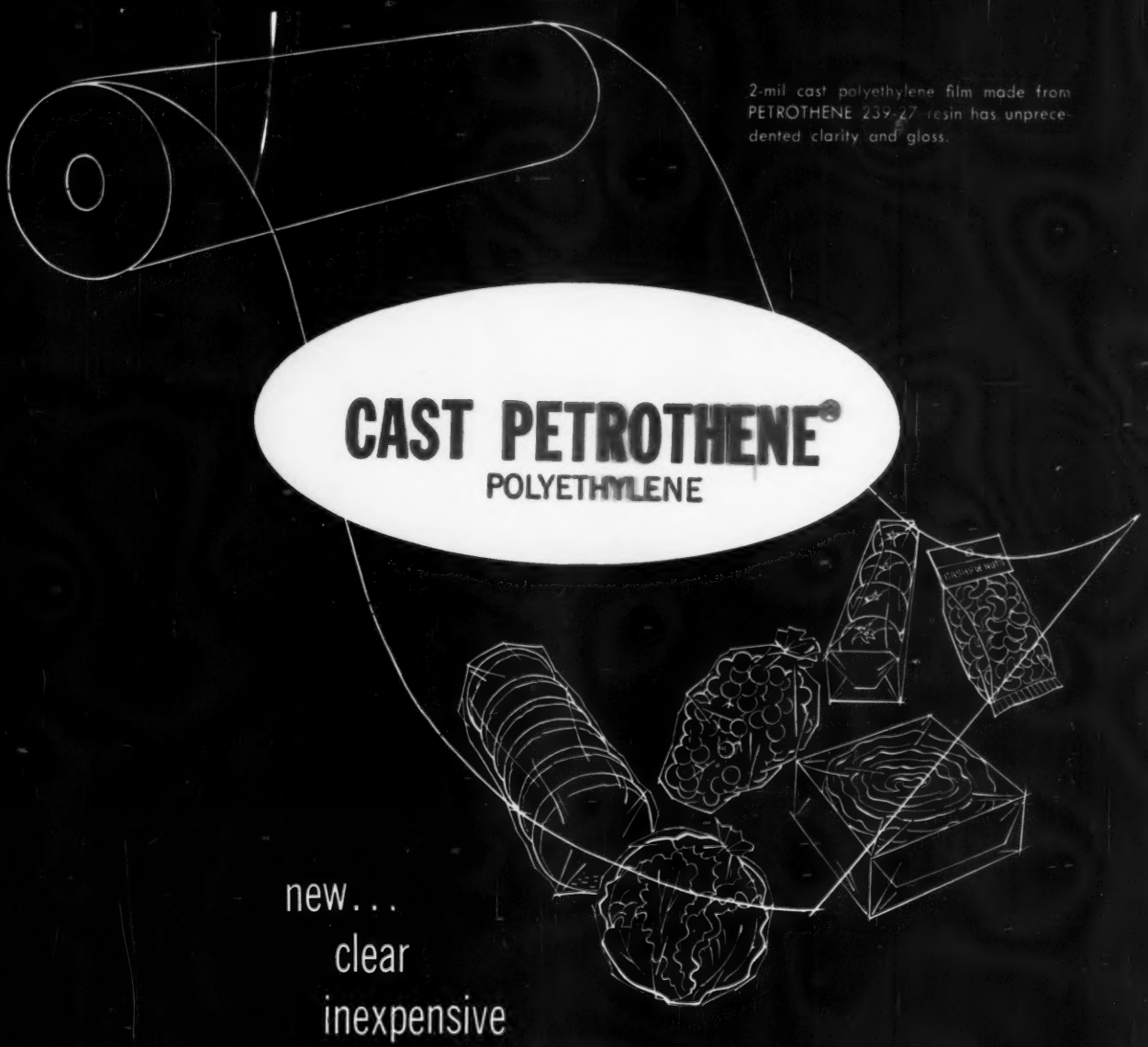
**8, Rue Eugène-Varlin, Paris 10, France**

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**U.S.I. INDUSTRIAL CHEMICALS CO.**
Division of National Distillers and Chemical Corp.
**99 Park Avenue, New York 16, N. Y.**
***Branches in Principal Cities***

# SHE'S GETTING FULL VALUE FROM POLYETHYLENE PACKAGING...HOW ABOUT YOU?

Polyethylene bags are tough . . . clear . . . inexpensive. They carry bulky produce through a lot of rough handling in the packing house, in the store, and on the way home. Their clarity and convenience boost consumer sales.

But these advantages are not automatic—you have to plan for them in your bag specifications. To get the most value for your polyethylene packaging dollar—

**Keep These 3 Points In Mind—**

• HOW MUCH STRENGTH . . . HOW MUCH CLARITY? Strength and clarity are built into polyethylene film through the resin. Generally, the more you want of one the more you have to give up of the other.

• MORE BAGS FOR THE SAME MONEY IS NOT ALWAYS THE BEST VALUE. You are probably getting thinner bags. You can easily lose more in packaging line delays and package failures than you save in first cost. To get exactly what you want—

• DECIDE ON YOUR NEEDS, THEN SET YOUR OWN SPECIFICATIONS. The film converter working with the resin manufacturer can vary such factors as bag size and type, thickness, package design, film strength, clarity, and slip.

Specify on your order exactly what characteristics are most important for your own needs; your converter can give them to you.

*More and more, packers and growers are setting specifications for their polyethylene bag purchases. U.S.I., makers of PETROTHENE® quality polyethylene resins, will be glad to assist you and your supplier in selecting the right materials for your packaging needs.*

**FREE**—To help users select and specify the polyethylene film best suited for most common flexible-packaging applications, U.S.I. has prepared a 4-page data sheet, "Which Polyethylene Film Should I Use?", which lists specific film properties required for specific uses. Also available is U.S.I.'s 8-page booklet, "Formulas and Tables for Polyethylene Film and Bags", to be used for calculating bag and film thickness to be expected from given weights of polyethylene. For your copies, write to U.S.I. at the address below.

**U.S.I. INDUSTRIAL CHEMICALS CO.**
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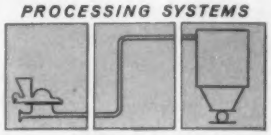
# RELIABILITY...

Because the movement of the stars never varies, an astronomer can determine time to the exact second by checking the position of Leo, Orion, or one of the other constellations that appear in the night skies. That's *reliability* — a word that has become a motto for Mikro-Products. Serving the rapidly growing processing industries, our reputation rides on the performance of the equipment we manufacture . . . good reason why our standards are high . . . good reason why Mikro grinding, conveying and dust collection units are built to put greater efficiency and economy into our customers' operations. If you'd like to know more about Mikro-Products . . . about Mikro quality and reliability, the information is yours on request, and without obligation.

## MIKRO-Products

SPAN THE GLOBE

PROCESSING SYSTEMS

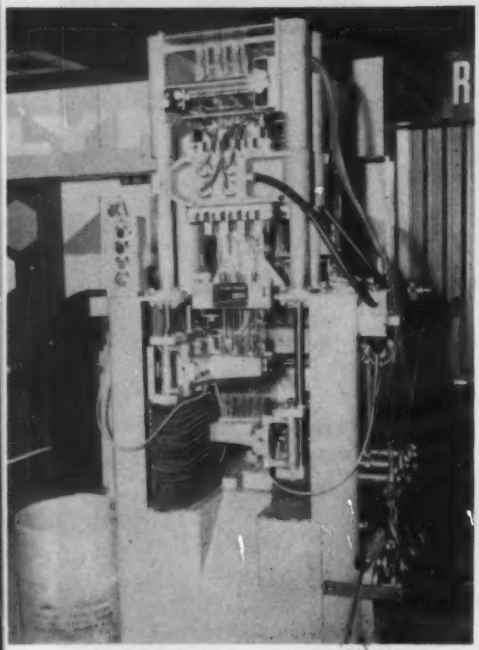


GRINDING CONVEYING COLLECTING

**Pulverizing Machinery Division • Metals Disintegrating Company, Inc.**
97 Chatham Road • Summit, New Jersey

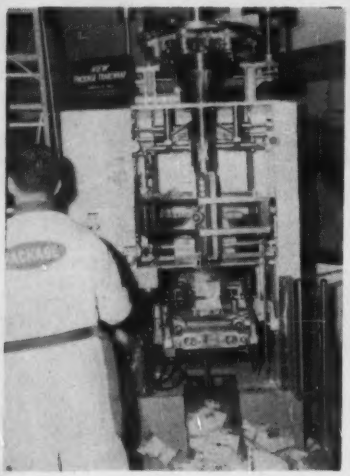
**REPRESENTATIVES throughout the United States, Continental Europe, British Isles, Canada, Mexico, Central and South America, West Indies, South Africa, India, Japan, Philippines, Australia and New Zealand.**

**MANUFACTURING FACILITIES: United States, Canada, Continental Europe, British Isles.**

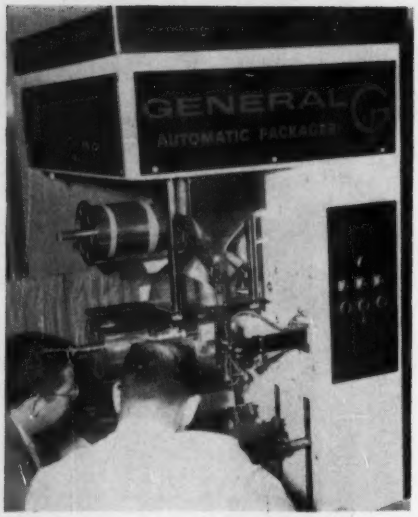


LIQUID FILLER forms, fills, seals 3 pouch type 2¼ in. packages simultaneously at 105-120/min. Length adjustable 7-11 in.—Lynch Corp., Anderson, Ind. (300)

## Pouch Formers, Fillers



POUCH - FORMER - filler - sealer adaptable to packaging frozen vegetables and candies. Forms bags in wide range of sizes at speeds up to 75/min. Bag lengths screw adjusted, speeds hand-wheel regulated. Available for auger, volumetric, net weight feeds.—Package Mch'y. Co., E. Longmeadow, Mass. (301)



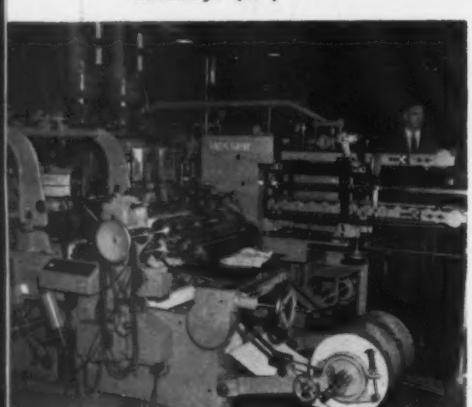

SINGLE-TUBE PACKAGER weighs products into bags formed from roll stock and sealed at rate of 45 bags per min. Features "eye"-film registration, no-product-no bag delivery, positive-action hydraulically operated heal-sealing jaws. — General Packaging Equipment Co., Houston, Tex. (302)

# 29 Units for Better Packaging

**Going after newer and more efficient ways to package your products? Then look over latest machines and devices spotlighted at PMMI Show**

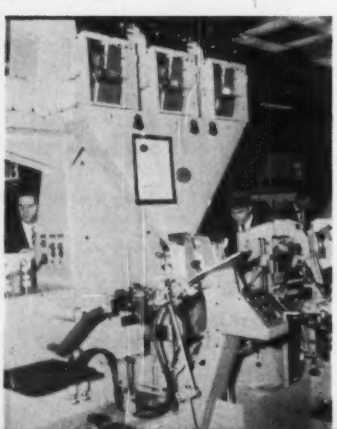
## 4 Baggers, 1 Wrapper

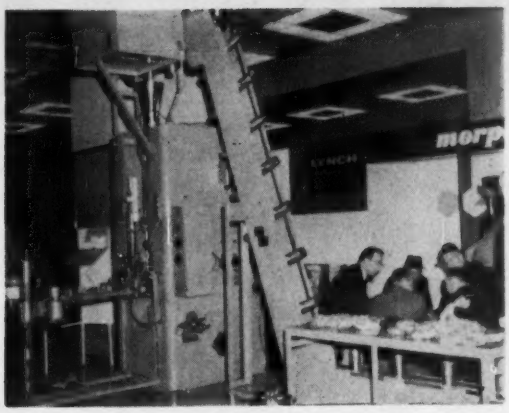
BAG FORMING-filling-sealing machine packages 5-lb. flour and similar items. Feeds pre-printed paper, registers cut-off, turret-forms bags, double-auger fills, vibrates, closes and glue-seals at 55/min.—Fr. Hesser Maschinenfabrik, Stuttgart, Germany. (303)



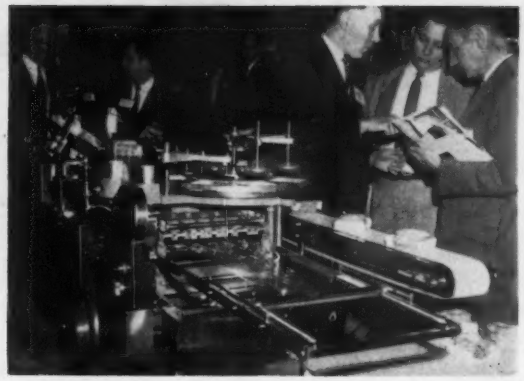
PACKAGING SYSTEM employs tube of reinforced single-ply kraft paper that's filled with consumer units, then sealed into rigid container type package. St. Regis Paper Co., N. Y. C. (304)

BAGGER opens, fills, closes prefabricated, lined bags at 35-55/min. Unit's equipped with net weight scales for accurate (±1g.) filling of free-flowing products. Packs in 4-oz. to 2-lb. sizes. Available to produce adhesive, tin-tie and heat-seal closures.—Stokes & Smith Div., FMC Corp., Philadelphia. (305)



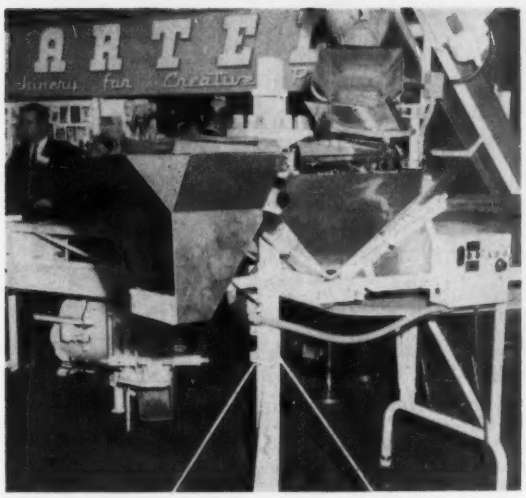


ROLL BAGGER comprising special indexing cam conveyor and Robo-Wrap bag former fills up to 40 bags/min.—Lynch Corp., Anderson, Ind. (306)

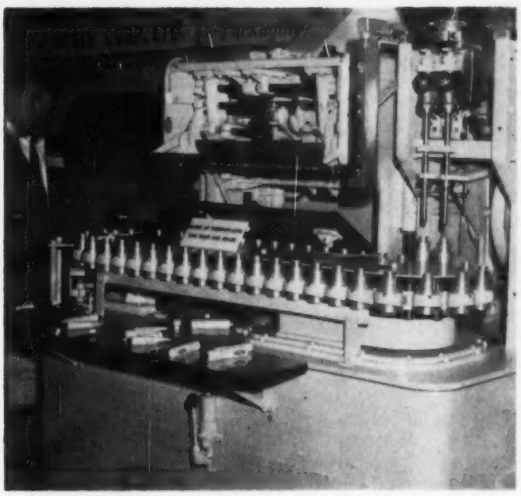


OVERWRAP MACHINE handles 75 pkg. (1-6 cookies)/min. Also sandwiches, doughnuts, pastries, rolls, etc.—Crompton & Knowles Corp., Holyoke, Mass. (307)

## 2 Weighers, 5 Fillers

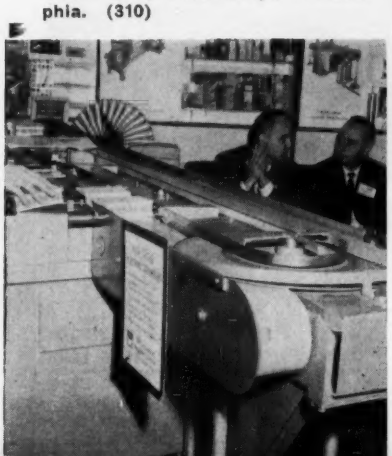


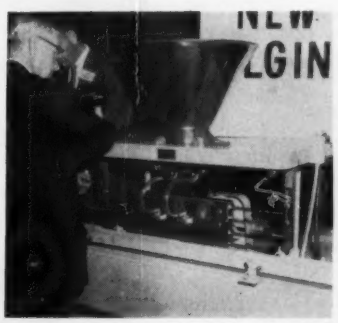
HIGH-SPEED UNIT for free- or semi-flowing products employs trimmed weight principle to attain maximum accuracy in ¼-20 oz. bags at 70/min.—Bartelt Eng. Co., Rockford, Ill. (308)



FILLER-SEALER for ⅜-2 in. dia. plastic tubes operates at 120/min. Features easy changeover for different sizes, no-tube, no-fill.—Carbert Mfg. Co., Cambridge, Mass. (309)

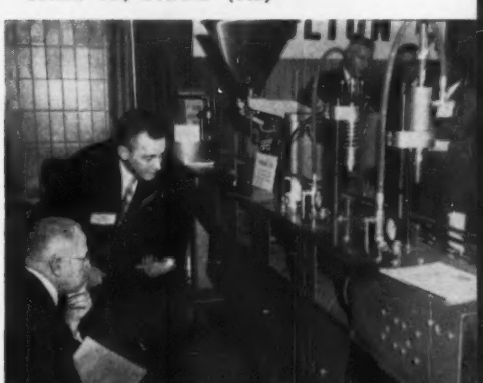
ELECTRONIC CHECKWEIGHER assures hairline accuracy plus 3-way segregation. Handles variety of packages at speeds to 400/min. Can be equipped with feedback control, recording devices.—Stokes & Smith Div., FMC Corp., Philadelphia. (310)

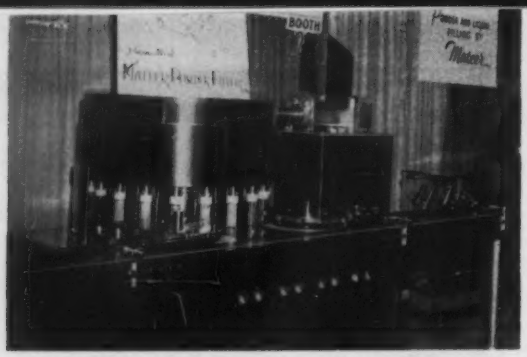




2-CYLINDER piston filler for liquids and semi-liquids has heads that move with containers for non-stop operation.—Elgin Mfg. Co., Elgin, Ill. (311)

STRAIGHT-LINE aerosol system features filler, crimping head, gassing station. Production is up to 30 cycles per min. Line handles standard aerosol cans, bottles and puck combinations. Available with twin filling-crimping stations. — Arthur Colton Co., Detroit. (312)





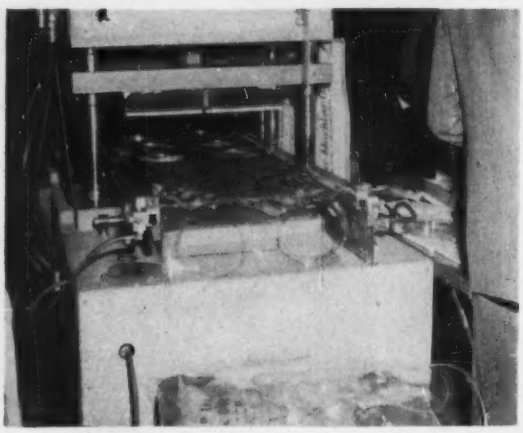
CONTINUOUS FILLER for dry products employs horizontal auger feeder to control density, stabilize volumetric efficiency. Built-in air conditioning system controls humidity of air or gas in filler and package.— G. D. Mateer Co., Wayne, Pa. (313)

COMBINATION filler-sealer handles polyethylene collapsible tubes at 60/min.—A & M Tool & Die Co., Inc., Southbridge, Mass. (314)

*Want more information on any items? Just circle the key numbers on Reader Service Card, back of book*

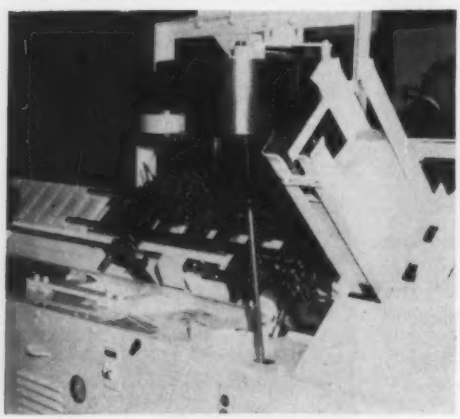
## 3 Carton Formers

FORMING MACHINE cold-folds and locks unscored die-cut oriented polystyrene blanks into trays 40-100/min. Locking feature overcomes objections to folding-type plastic cartons.—R. A. Jones & Co., Cincinnati. (315)

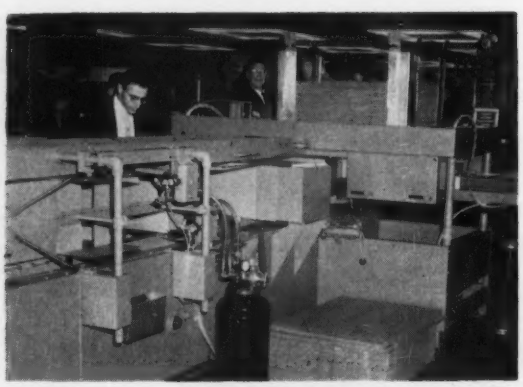


AUTOMATIC UNIT hydraulically pressure-forms and trims thermoplastic sheets into cartons. Timer controls heating, cooling, air-release. Temperature range 100-600F. —Atlas Vac-Machine Corp., Rochester, N. Y. (316)

UNIT for ¼-½ lb. hard candy, picks flat carton from magazine, opens, tucks bottom flaps, volumetrically fills, then tucks top flaps at 60/min.— U. S. Automatic Box Mch'y. Co., Boston. (317)

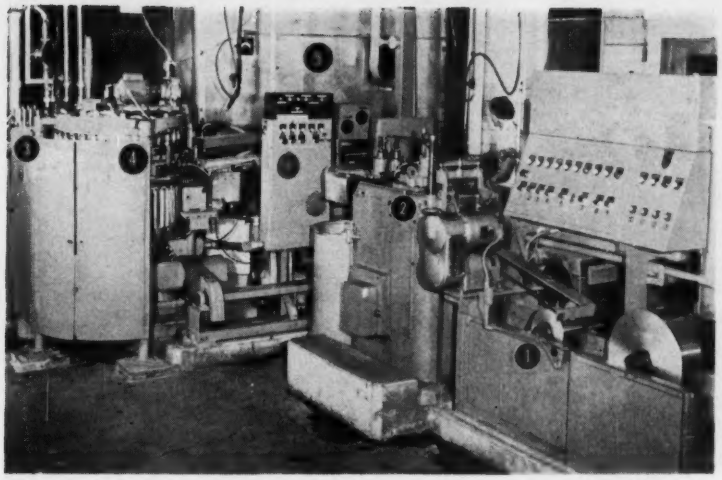


## 2 Casers, 5 Sealers



FORMER, Packer, sealer strips knock-down case from stack, sets it up, presents to packer, then glues and seals filled unit at 15/min.—Emhart Mfg. Co., Portland, Conn. (318)

**For more Advanced Packaging units turn to page 122** ➡



DOES IT ALL: Aluminum is fed from roll (1) into punch-press for forming (2). Pocketed conveyor carries cups to filler (3), around sealer (4), and into cooler (5), readied for cartoning.

## Machine and Its Product

HERMETICALLY SEALED containers have flanged seal for easy opening.

# Automates Single Portions

**Prototype machine produces filled and heat-sealed aluminum containers for individual service at rates of 200-400/min. in sizes ¼-2 oz.**

A COMPLETELY AUTOMATIC machine that forms, fills, seals, and readies aluminum-foil containers for cartoning, is now turning out ½-oz. single portions of jams, jellies, marmalades, and apple butter.

Operated by J. M. Smucker Co., Orrville, Ohio, the unique high-speed machine is geared to the growing need for single-unit service. It can produce the filled containers at rates of 200-400/min. in sizes ¼-2 oz. Fully-automated operation for complete packaging minimizes inventory control and eliminates warehouse space for pre-formed containers.

At Smucker, vinyl-coated .004 ga. aluminum roll foil is fed continuously over an automatic splice detector and into the press that blanks, forms, and trims two containers per stroke. A blank and draw die does forming on regular punch press, followed by a shearing unit that trims rough edges.

Containers are carried through a vacuum system to remove any dust or chips and placed in conveyor pockets connected by an endless link-chain. Conveyor moves packages to filler, a Pfaudler rotary unit with 36 piston type heads. Filler circles and synchronizes directly over pockets to discharge metered volume of material. On Smucker ½-oz. line, filler has been operating at 250/min.

At sealing, a magazine feeds die-cut caps or lids into a 36-head unit that covers containers and hermetically seals by heat and pressure. Outside paper, foil, and vinyl-coating make up three-layer cap, which is sealed to thin vinyl coating on inside surface of cup. Cup's coating also serves as a barrier between aluminum and filled contents.

Hot products transfer automatically from sealing station onto belt, which passes through 20-ft. optional cooling unit, consisting of a force-cooled air tunnel. After cooling, containers are oriented for either manual or automatic cartoning. Smucker packs finished containers into trays, 20 per tray, 10 trays per 8-lb. carton.

Complete operation, from roll through cooler, averages about 7 min. per cup. Maximum speed considered most practical is 200/min. for largest container (2 oz.) and 400/min. for ¼-oz. size. Overall space occupied is 20x35 ft. with cooler.

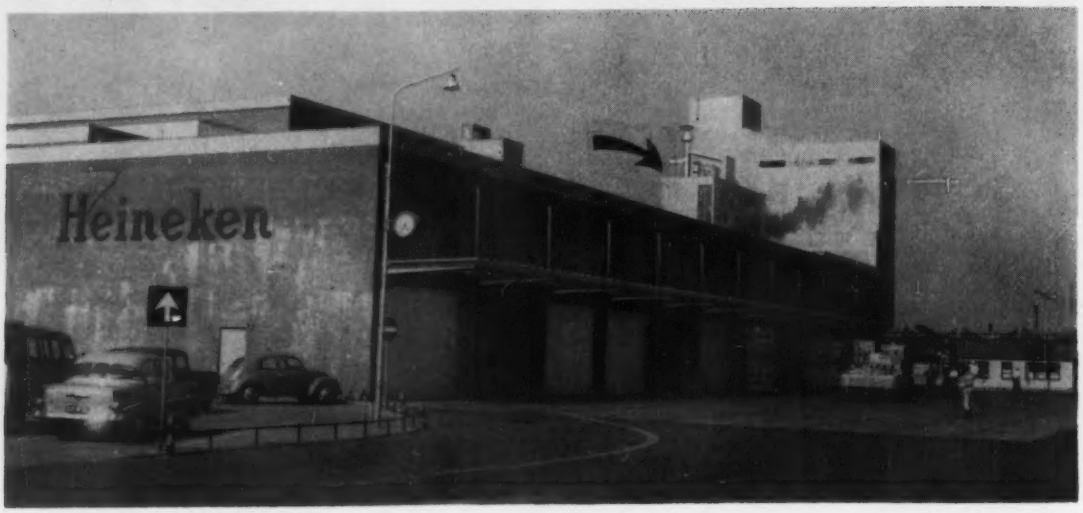
Alcoa introduced individual aluminum containers over a year ago and worked with United Shoe Machinery Co. to develop the prototype machine. Container is cited for advantages over other single-portion packages: Hot materials can be sealed hermetically, eliminating need for preservatives and creating indefinite refrigerated shelf-life.

To promote marketing of the containers and test consumer reactions, Ecko-Alcoa has introduced a special filling and sealing machine. Ecko supplys vinyl-coated pre-formed containers to manufacturers for use on the machine, which can turn out filled packages at 31/min., using a combination 8-pocket filler-sealer.

### Explore Other Uses

A similar machine is now in use at Anheuser-Busch, New Orleans, producing 1½-oz. aluminum packages of Bud Waffle Syrup. Alcoa officials expect some smaller companies to be satisfied with just the filling and sealing unit. But successful production by the prototype at Smucker is also expected to create a demand for the complete unit.

Smucker now uses its machine for institutional products. But trial plans call for supermarket "consumer packages," including dietetic jellies and ice cream toppings. Other possible users include makers of ketchup, mayonnaise, salad dressings, syrups, and similar products. —*End*




**HEINEKEN OF HOLLAND** builds pace-setting plant with unique block brewhouse (arrow) and advanced unit operations to produce efficiently for expanding domestic and international markets.

# Dutch Brewer Has New Ideas

**World famous Heineken beer now is produced for expanding domestic and export markets in new brewery with pace-setting advances**

ONE OF THE WORLD'S best beers, Heineken, is brewed in one of the world's most advanced breweries at Hertogenbosch, Holland. Building design is ultra modern. Unit operations, such as materials handling, packaging, and process control, are exemplary for pace-setting food factories.

The plant has one of the few outstanding process innovations made in brewing in many years—the space-saving block brewhouse. And processing is, of course, quality oriented.

Like its product, the brewery is international in that it is equipped with the best from several countries. So Heineken is in a position to take a still larger slice of the international beer market, including that in the United States. Significantly, the new brewery already is expanding its facilities. Both domestic and export sales are increasing.

Outstanding feature of the modern building design is the glass walled bottling house comprising one end of the plant, and a similarly constructed auxiliary service building. The bottling-department walls comprise twin-pane windows from floor to ceiling.

**FRANK K. LAWLER**
Editor, "Food Engineering"

## Efficient Block Brewhouse

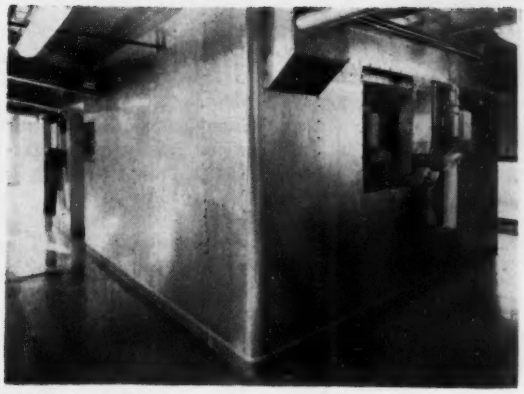
Process-wise, the principal feature is, of course, the block brewhouse, developed recently in Dortmund, Germany. For a single-brew capacity of 11,400 gal., this brewhouse is only 32.8 ft. wide, 65.6 long, and 82 ft. high. Such compactness is achieved by the unique shape and placement of the process vessels. In the direction of process gravity flow, from the top down, the vessels are located one below the other. The top vessel has two sections, the brewing copper and the mash tub. Below in sequence are the lauter tub, holding tank wort cooker and settling tub.

Being identical in construction, the brewing kettle and the mash tun can function interchangeably.

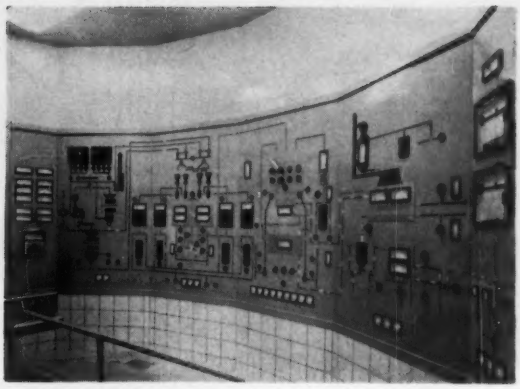
Rectangular in the horizontal plane, each of these vessels has a curved bottom. The latter feature permits the bottom of each to nest inside the top of the one below to minimize the height of the brewhouse. Steam coils comprising half-tubes are welded to the bottom of the cooker on the outside. Under the lauter tub is a battery of 14 clarification pipes by which the number of brews per day can be increased.

Made of stainless steel, the brew vessels are insulated and covered with sheet aluminum.

Processing is automatically controlled from a graphic instrument panel located at some distance from the brewhouse. And one man supervises process operations. Bulk materials handling, utilizing pneumatic, mechanical mass-flow (Redler) and gravity conveyors, is actuated from a central switch panel. Ingredients are automatically weighed into process, with electric strain-gage load cells (Phillips) being used



**SPACE-SAVING** rectangular process vessels, like this wort cooker, are arranged one below other in unusual block brewhouse.



**PROCESS CONTROL** in brewhouse centers on remote graphic instrument panel. One man supervises processing operations.

to weigh malt and rice. Discharge valves at the bottoms of 19 concrete storage silos are motor operated.

## Advanced Fermenting Units

Ebon-coated concrete forms the 23 open-top, 24,200-gal. fermenters. And two flat easy-to-clean plate-enclosed cooling coils are suspended in each of these units. Refrigerated alcohol circulates through the coils as fermentation proceeds for 12 hr. per brew. And the beer can be chilled to 34 deg. F. within 24 hr. after fermentation is completed.

Final fermentation, or storage, tanks are of glass-lined steel and are equipped to discharge $CO_2$ at a steady, controlled pressure. Temperature in the 2,640,000 gal. storage space is kept at 34 deg. F., while the brew ferments to 5% alcohol by volume and ages for 10 to 12 weeks.

As modern production-wise as the building housing it, the bottling operation involves one line with 30,000 per hr. throughput (12 oz. bottles) and two 18,000 per hr. lines. One of the latter is an American line for canned beer.

Fillers are Super Semco-Crown units with 50 heads. One pasteurizer is a double-deck Barry Wehmiller Vortex machine with Taylor temperature controllers.

Cans are filled by a Dumore unit, weight-checked for fill, and pasteurized in the same equipment as the bottles.

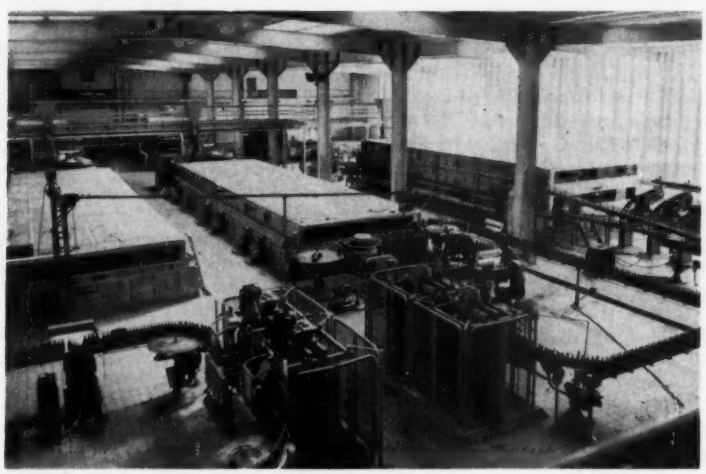
Tap beer goes into stainless steel kegs, with only one opening in an end that serves both for filling and emptying. And a plastic bung closes this opening. The kegs are handled on a chain conveyor with hangers, are cleaned in automatic washers.

## Many More Features

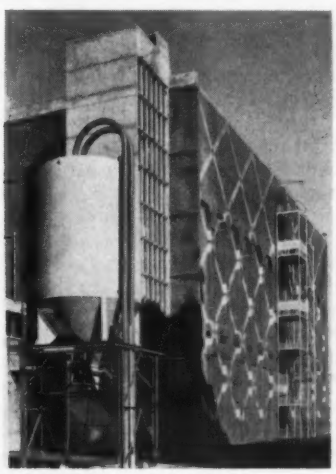
The plant uses a fast new lowerator in which bottles rest on "steps" extending from a continuous chain. For easy maintenance and extension, all service and beer piping is installed in tunnels under the brewery. To permit quick expansion, a cork wall forms one side of the fermentation house.

Other features include German electric motors with external cooling fins, a tunnel in which cans are spray-cleaned while being conveyed upside down, and butane-powered lift trucks in the warehouse.

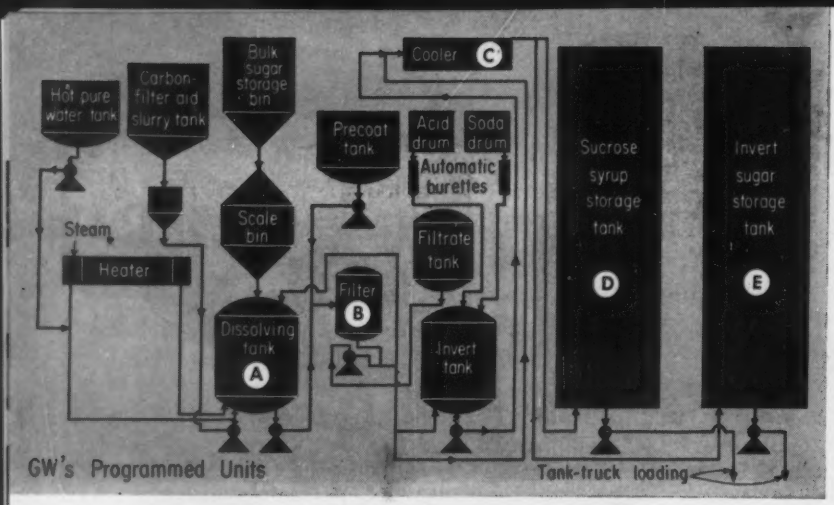
Employing 250 men, the brewery operates its bottling plant two shifts the brewhouse three shifts to make four or five brews a day. —*End*



**GLASS-WALLED** bottling department has double-deck American pasteurizer and other advanced equipment.



**EXPANSION** to handle increasing business is made easy by cork wall.




LAYOUT of Great Western's automated facility for efficient refining of liquid sugars. In programmed sequence pre-measured amounts of water and sugar are introduced into dissolving tank (A). After timed heating and mixing, liquid sugar is filtered (B) and cooled (C) before going into storage (D and E), ready for shipment. Also, liquid sugar can be directed to invert tanks, where acid and then alkali are added prior to cooling and storing.

# Timed-Program System 'Robots' Processing

**Pre-set units operate through relays and valves to actuate and 'interval' various steps in manufacture of sucrose and invert liquid sugars**

EFFICIENCY-PLUS is the picture: A brand-new liquid sugar plant . . . Automatic controls added . . . Only two men running the operation—standing back and watching liquid sugar (67-Brix sucrose and 76-Brix invert) flow out.

Here, timed-program controllers (Taylor Flex-O-Timers) are mated to sugar dissolving and inverting processes for striking coordination of batch routines into continuous operations.

The scene is Great Western Sugar Co.'s Brookfield, Ill., bulk-dry and liquid sugar terminal. Top scientific and practical know-how was brought to bear on this soundly engineered facility, the latest in the firm's moves to improve service to Chicago area industrial customers.

A model of high performance, the plant reflects the increasing trend to bulk delivery, resulting in stepped up convenience in handling sugar in dry and various liquid forms.

And there are prime strides cited by GW in the new system's—

- **Boosted output of top-quality sugar products.**
- **Automatic transfer operations, start to finish.**
- **Automatic compensation for variations in heating and cooling.**

**JOHN V. ZIEMBA**
Associate Editor, "Food Engineering"

The terminal is set up to receive bulk sugar from GW's western factories via Airslide RR cars. Unloading is by a series of screw conveyors and bucket elevator feeding into four 4,000-cwt. storage bins. From here, sugar is either directly loaded into bulk trucks for customer delivery or conveyed into the liquid-sugar plant. After processing, sucrose or invert liquid sugars are tank-truck delivered to customers.

At the heart of the liquid-sugar operations are the timed-program controllers hooked to the dissolving and inverting stations. There are six timers—one for the dissolving tanks, and one master plus the remaining four for invert tanks.

The controllers' easily adjustable "pins" trip switches to actuate and time the various process steps. Flashing panel board pilot lights signal sequential progress of control operations through electrically operated relays and pneumatic valves.

## Dissolving Controls

An illustrative performance is the melting of sugar into sucrose syrup. Here, we focus on the operator as he sets up for an automatic time cycle-control run:

He first twists a selector switch to operate controls for the 2,000-gal. dissolving tank to be used, then turns on tank's agitator. Next, he presses a pushbutton that closes the 6,000-lb. scale hopper's (Howe) drain valve.

Before proceeding, however, he manually prints scale hopper's tare weight, and sets scale to weigh amount of sugar to be discharged into dissolving tank. He also presets water meter, checks and sets 800-gal. slurry tank for needed activated carbon and filter aid.

He now presses a "start" button to operate a scroll that draws sugar from a 4,000-cwt. supply bin and fills scale hopper. Screw conveyor seals through normally closed contacts controlled by scale switch, and interlocks contact a scroll-motor starter.

Now the timed-program controller starts through action of a time-delay relay. Unit energizes solenoid valve that delivers water (ion-exchange demineralized) to dissolving tank. If water isn't going into process, another relay stops timer.

If all is Okay, pilot lights signal that cycle is ready to start, then indicates that it's in progress. When charged, water-meter switch turns off solenoid valve (water-adding). Contacts remain closed until meter switch energizes a relay and seals itself in (opening circuit to stop timer if water hasn't been added).

When scale bin reaches pre-set weight, a switch closes, energizing a relay that stops scroll. Then a time-delay switch activates a unit that prints the weight (after a short delay

permits scale beam to stop oscillating, relay remaining closed until weight's printed).

The timer then energizes relay to open scale bin's drain valve. Relay is de-energized when valve's open, and scroll starts feeding sugar to dissolving tank. When scale bin is empty, switch starts relay, stopping scroll's motor.

At this point, the timer activates time-delay relay to start syrup-circulating pump and to deliver steam through solenoid valve to circulating heater. Flow switch closes before timer de-energizes relay to stop circulating pump.

Next, valves are manually aligned to filter (Sparkler) and dissolving tank's return line to circulate syrup through both. Timer now energizes solenoid valve feeding filter aid to measuring tank. When full, float switch closes valve and timer activates drain portion of cycle. Another solenoid valve then adds filter aid to dissolving tank. And at end of complete time cycle, solenoid valve closes, turning off steam to circulating heater.

The operator is now ready to filter. He presses selector switch to position of other dissolving tank. Automatically, the circulating valve on tank just batched now closes, and flow switch stops pump. Cycle is now ready for repeat on next switch-selected dissolving tank.

To filter, operator presses two buttons. The first one opens dissolving tank's drain valve, and the second starts filter pump, which continues running after flow switch closes and energizes time delay. When tank's empty, flow switch opens to shut off pump.

Valves are now again aligned—this time to deliver syrup from filter-receiving tank to plate-type cooler or to inversion station. If syrup's to go through cooler and into storage tank (15,000 gal.), cooler pump is turned on when filter-receiving tank is about half full. Pressure switch at cooler inlet energizes solenoid valve that handles cooling water.

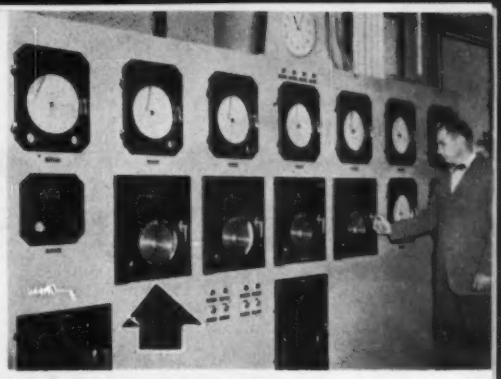
All the while, the operator carefully checks progress by the series of lights moving across the panel. By the time he pumps syrup to storage or inversion tanks, the next batch has been set up. Total time: About 45 min.

Now let's see how second operator sets up an inversion run: After he presses a button to start inverting cycle, a relay closes to operate master timer. Timer's switch closes, energizing solenoid valve to fill selected inverting tank (1,000 gal.) and to stop timer. Open valve closes a limit switch, supplying power through pressure switch to the pump filling the inverting tank.

When tank's full, pressure switch stops pump and energizes solenoid that restarts master timer, which then supplies power to inverting tank's timer and also carries out filling sequence for other three tanks. Red light indicates cycle's on for selected tank.

If a tank's taken out of sequence (as for cleaning), selector switch is flicked for newly designated tank, and sequence proceeds.

When master timer supplies power to inverting timer, latter closes its own hold-in circuit. Inverting timer then starts tank's agitator, turns on temperature controller's pneumatic system, stops timing until batch's heat rises and closes temperature switch. After correct heat is attained, timer recycles and by-passes temperature switch.



KEY to automated liquid-sugar operations is series of panel-mounted timed-program controllers (arrow).

## In Goes Inverting Agent

Timer now closes contact and energizes solenoid to add acid. In event the burette is not full, relay prevents solenoid from operating. Immediately, another relay sounds a howler to warn operator, stops timer, and flashes a red warning light indicating short acid supply.

After the acid is drained, timer contact transfers to check if acid has been discharged. If not, another relay stops timer and turns on an alarm and signal light.

If all is in order, timer energizes solenoid adding pre-set amount of soda into inverting tank. As with acid, there are similar check-backs on burette filling and draining.

After addition of soda, timer shuts off pneumatically operated steam valve, stops agitator, and energizes solenoid opening tank's drain valve. It also activates relay preventing other inverting tanks from draining, and stops timer motor.

Opening of the valve activates a limit switch operating a pressure switch that starts cooler pump and restarts timer. With flow switch closed, cooler pump keeps running. And pressure switch at cooler's inlet operates solenoid valve that feeds water to cooler.

When the tank is empty and invert sugar is delivered to 15,000-gal. storage tank, opening flow switch shuts off cooler pump. After "timing out', the contacts transfer to close tank's drain valve and stop timer. Period to invert a batch: About 45 min. —*End*

## Focus on Pre-Set Components

**As demonstrated by GW—with ingredient feeding bin and tank routines, batch heating and cooling, etc.—you can automatically time the sequence and duration of operations in robot fashion. Once a process program is set up, all it takes is pressing a switch and a few pushbuttons.**

**Basically, the controlling system (Taylor) comprises two major components—for time-measuring and process-actuting. Time-measuring is handled by locking the process programming into a synchronous motor-driven, direct-reading time dial. All that is required is to clamp program trip-pins on the dial for the definite intervals at which the process functions are to take place.**

**Process actuating is accomplished by electrical switches and air valves, their step disks and a non-synchronous step motor. Then, with the dial trip-pins in proper step-disk notches, the system is all set for instant automatic operations. Through these trip-pins, the motor operates electrical and pneumatic functions according to the set process program.**

**When the controlling system is thus keyed, it calls every turn of the batch cycle. And should there be any slip-up, it will be shown by a series of "tilt" lights across the panel, whereupon operations automatically stop until the control system makes a runback and restarts after correction.**

Safe
Sure
Yellow
Pure

# The Color That Nourishes

TESTED AND PROVED OK IN ACTUAL INDUSTRY USE

## Beta CAROTENE Roche

### WITH VITAMIN A POTENCY

Beta Carotene Roche is carotene in the most highly purified form available commercially. It is free of other carotenoids, whose variable color values and lower vitamin A potencies often cause trouble in food processing. Standardize on Beta Carotene Roche for *true carotene yellow color* without any tinge of green or red.

*You'll have a better product to make your product better.*

### NOW 5 CONVENIENT FORMS

**• DRY BETA CAROTENE BEADLETS. Type 2.4—5**

Water-dispersible, free-flowing beadlets to standardize color of water-base foods. Rapidly dispersible with good stability, Roche Dry Beta Carotene Beadlets contribute a clouded effect similar to that produced by fruit insolubles. Excellent for coloring fruit drinks, gelatin desserts, puddings, dessert toppings, mellorine, confections, egg yolk products, baked goods, cheese, creamed foods, etc., with true natural yellow color. Each gram provides approximately 40,000 U.S.P. units of vitamin A as beta carotene.

**• 30% BETA CAROTENE IN VEGETABLE OIL**

*Liquid suspension.* 500,000 U.S.P. units of vitamin A activity per gram. Excellent for natural yellow coloring of foods with high fat content: margarine, shortening, lard, baked goods, cake mixes, processed cheese, egg yolk products, candies, soups, stews, frozen dinners, toppings, frostings. Easily handled: liquid at room temperature. Excellent color stability. High purity insures uniformity. Ask for free Roche technical help with all food-coloring problems.

**• 24% BETA CAROTENE: SEMI-SOLID SUSPENSION**

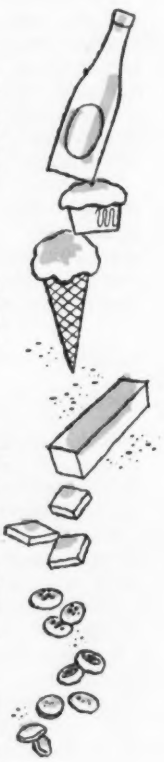
Contains 400,000 U.S.P. units of vitamin A activity per gram in vegetable oil. Semi-solid suspension facilitates exact weighing for batch control. Used for same foods mentioned above. Roche Beta Carotene imparts to foods a true, *natural* yellow color without "off" shades. Vitamin A value inherently present adds a nutritional bonus.

**• BETA CAROTENE AND VITAMIN A BLENDS**

Roche will custom blend its Beta Carotene and vitamin A (acetate or palmitate) in vegetable oil exactly to your specifications and package in sealed, sanitary batch-sized cans carrying labels of your formula. This is another example of the extra service margarine manufacturers and processors of other foods can always expect from Roche.

**• BETA CAROTENE BLENDS IN VEGETABLE OIL**

Blends of Beta Carotene Roche and vegetable oil are available to your specific requirements to a minimum dilution of 6% beta carotene. Your orders are packaged in batch-size, sealed sanitary cans especially labeled for you. Useful for processing baked goods, cake mixes, shortening and lard, cheese, toppings and frostings, candies, soups and stews, frozen dinners. Your foods receive vitamin A value at no extra cost.



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## Tames Exhaust, Ends Complaints

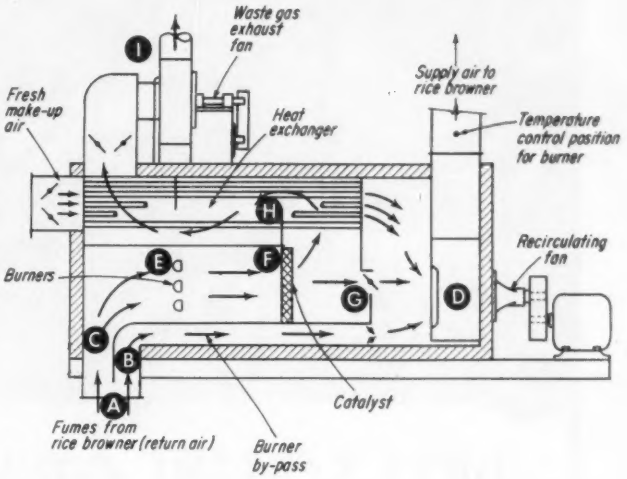
Curbing of fumes—and costs—in rice browning operation: Gases, comprising 400F. rice-oil vapor and chaff, enter unit at (A) and split to two streams (B) and (C). Former goes direct to recirculating fan (D), latter to 700F. heater (E) preceding catalyst section (F). Catalyst bed consumes gases (low temperature without flame), and fumes discharge at 750F. (rise due to combustion).

Leaving catalyst, portion of oxidized gases goes through damper unit (G) to recirculating fan. Remainder is exhausted (H to I), maintaining insurance approval for temperature-controlled gas-fired volatilizing. Flow here is over heat-exchange tubing to release sensible heat to fresh make-up air before discharge at about 300F.

Since rice browning is at 500F., self-recuperation (through heat-exchanger) cuts fuel consumption of process.

In operation 2 yr., unit has required no factory servicing. Every 3 mo., catalyst unit is removed for cleaning out ash and other inorganics (immersion wash in hot soap solution, then water rinses). This way, catalyst lasts about 5 yr., at which time factory will strip off residual precious metals and recoat unit for further use.

Due to curbing buildup of combustible residues in stack, exhaust fan, and duct, the system is hailed for its safety.




U.S. and foreign patents granted and pending

# Fume Gobbler Pays Extra Benefits

**Charges that your plant process exhaust is fouling the air are quickly quieted when you pass the gas through a modern catalytic unit. What's more, you save fuel**

DOES YOUR OPERATION pose a fume problem—smoke and gases from roasters, cookers, or fryers exhausted to the outside air and irritating noses and eyes? Turning neighbors against you and involving brushes with local law enforcement agencies?

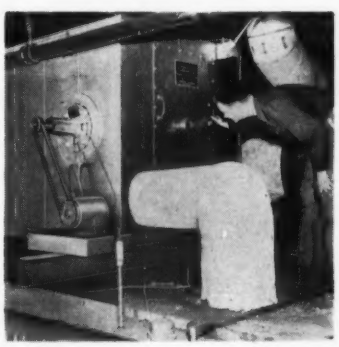
If you face such complaints, then a pertinent move worth weighing is installation of catalytic heaters to eliminate the fumes. Particularly notable is the high success these units are now enjoying.

**Using catalytic units for a dual function—both to supply heat and to consume exhaust fumes—is a hard combination to beat. Moreover, some food firms report very specific reductions in process and maintenance costs.**

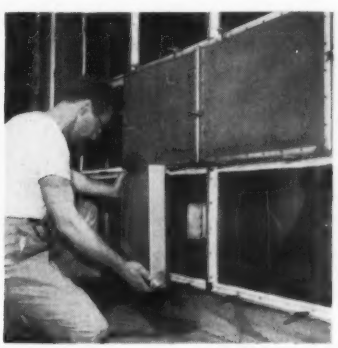
Thus, a West Coast company recovers heat from its rice-browning operation while burning up exhaust gases and chaff. End products of the catalysis are inoffensive odor-free and color-free gases that directly disperse in the air.

A unit in a Southwest corn-chip plant, installed following complaints, quickly won approval of local authorities. Here, fumes are consumed by hood exhausters over continuous fryers, thus preventing fouling of the air. And moving to another industry branch, a system in a lard refinery handles, through a manifold arrangement, water vapor and odorous constituents in exhaust from a number of dry-fat renderers. Further, satisfactory pilot runs have been made on exhaust from potato chip fryers.

Leading food-field interest, however, has been displayed by coffee people, long interested in abolishing roaster odors (see "Catalyst Curbs



COMPACT catalyst unit has proved effective in eradicating offensive fumes from cooking, roasting, and frying operations. Often, best location is on roof, which shortens length of duct required.



KEY components are catalyst elements seen here being mounted in gasketed framework. Each is 2¾x18x24 in., with gas throughput of about 1,500 cfm. Exceptional service life is cited.

Air Pollution," FE Aug. '53, p. 63). Here, work is now underway on direct flame burning of roaster-exhaust gases.

Others showing special interest are deep-fat fryers of fish and those who process animal feeds from various materials (as fats, fish wastes, and chicken entrails).

While elimination of air pollution has been the primary objective of many initial catalytic installations, there is also emphasis on heat recovery. Trend toward catalytic heat recovery has undoubtedly been influenced by efforts of gas utilities, who are tipping off their customers on means for more effective and economical use of gas fuel.

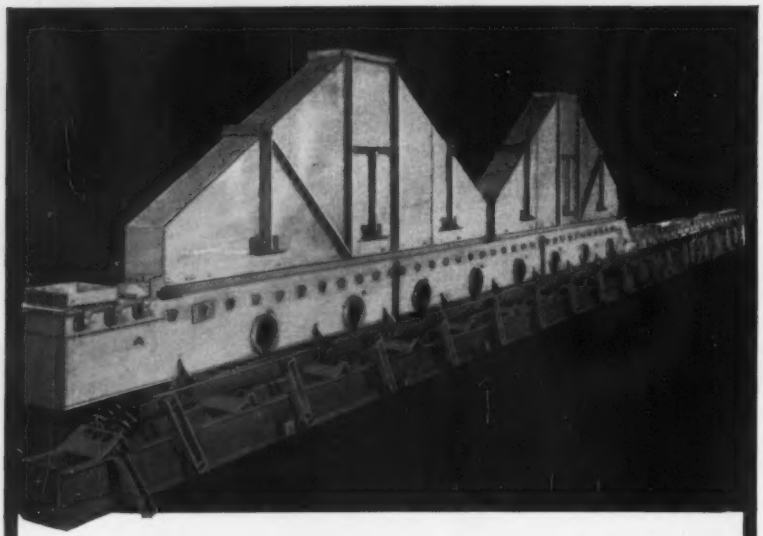
### Flameless Burning

Heart of the equipment is the catalyst. Employed are crimped high-nickle alloy ribbons laid random fashion in standard-size channel frames and electrolytically coated with a high-temperature-activated catalyst (platinum alloy with precious metals). The frames, which lie on an asbestos gasket supported by angle irons, are easily removed for maintenance–periodic washing to remove inorganic residues.

Combustion takes place when fumes–regardless of dilution–are exposed to the corrosion-resistant catalyst at suitable temperatures. In fume control, the exhaust flow is first gas or electrically pre-heated (500-700F.), then goes through a blower to be oxidized on surface of catalyst (without flame) to $CO_2$ and water vapor. In effect, the catalyst low-temperature "burns" gases even though their concentrations are far below the lower level of flammability.

Oxidation is exothermic (heat-liberated) as gases pass at up to 500 fpm. through the catalyst. This clean heat is returned to the system to pre-heat fresh fumes coming from process. Once operating, the output of the pre-heat burner is reduced, extent depending on the amount of catalyst-released heat acquired from the fumes. High fume concentrations result in better efficiency, lower operating cost.

The catalyst doesn't enter into the oxidation reaction. Its theoretical life is, therefore, limitless. In practice, however, it doesn't quite work that way. Even so, on fume streams essentially free of inorganic matter, catalytic units have piled up over 24,000 hr. without requiring service. When a catalyst does require replacement, it's done on a simple exchange basis. —*End*

# DRY! SCREEN! CONVEY!

## ONE Carrier Conveyor Does It All!

A well-known chemical processor needed a unit that would *dry* and *convey* 5/16" carbonaceous particles at a rate of 2 TPH (on a limited floor area).

*This efficient Carrier Natural-Frequency Dryerveyor* (60' long, 12" wide) *filled the bill!* It reduced conveying, drying and maintenance costs, and Carrier pre-assembly made installation easy.

This custom engineered Carrier Dryerveyor has an easy-to-adjust dual drive that permits two different conveying speeds—one for drying (2 TPH) and one for standard conveying (15 TPH).

The moist particles are quickly dried by the 350°F. air which passes through them as they vibrate along the screen deck. The drying section is designed to expand or contract without stressing the structural parts. *Particle moisture is reduced from 14% to .5%* and fines are removed before the material enters the 30' conveying section.

*For more information, write: Carrier Conveyor Corporation, 213-A North Jackson St., Louisville, Ky.*

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*Engineering Specialists in Vibrating Equipment*

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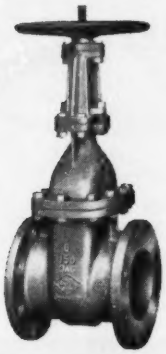
DISTRIBUTE ● ELEVATE
● FLATTEN BAGS



In this **Split Wedge Gate**

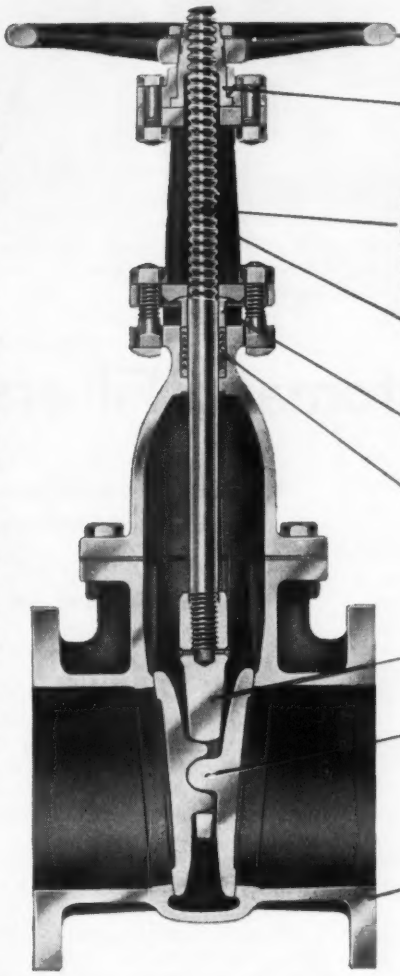
you can see why it pays to

# Specify JENKINS for STAINLESS STEEL Valves, too

This picture shows the many points of excellence in the design and construction of Jenkins Fig. 1327 Split Wedge Stainless Steel Gate Valves. Compare them with any valve you know. You'll conclude that it's hard to beat Jenkins at making valves, no matter what the material.

But no picture can show the quality of the castings . . . the precision machining . . . the rigid inspection and testing that have gone into this valve. All of these are as important as design and metal alloys in assuring long, dependable, economical valve service. And, all of them are up to the peak standards for which Jenkins has been known for almost a century.

SEND FOR NEW CATALOG of Jenkins Stainless Steel Valves. You'll find in it the patterns you want, in a choice of alloys that satisfy the requirements of practically all corrosive services. Also, you'll see that these Jenkins valves meet valve industry specifications and the high standards established by the leading users of stainless steel valves. Jenkins Bros., 100 Park Avenue, New York 17.



**WHEEL** of high strength malleable iron designed for firm grip and easy operation.

**YOKE BUSHING,** easily renewable. Made of bronze, for ideal thread engagement with stainless steel spindle, to prevent seizing or galling of spindle threads. Bushing of stainless steel is optional.

**SPINDLE** has long thread bearing surfaces with correct lead for easy, tight closing. Screws into wedge carrier, then secured by a stainless steel pin.

**YOKE BONNET** has liberal space between yoke arms for easy access to packing box. Precision machined flange face assures uniform contact with gasket for a tight body-bonnet joint.

**GLAND** consists of two pieces — gland flange and gland follower — eliminates binding of follower in case gland bolts are tightened unevenly.

**PACKING** of Chevron-type Teflon in large packing box prevents leakage. Only a minimum load is required on gland, extending service life of packing.

**WEDGE CARRIER** connects wedge to spindle and raises or lowers it. Husky in size to stand any operating strains.

**SPLIT WEDGE** is the ball-and-socket design which automatically adjusts to the tapered seating surfaces for positive shutoff. The discs, revolving freely in the wedge carrier, produce a self-cleaning action on seating surfaces and reduce possibility of galling and seizing.

**BODY** —Through-port design for full, free flow. Ample wall thickness and good design provide extra strength to withstand stresses. End flanges conform to M.S.S. specs.

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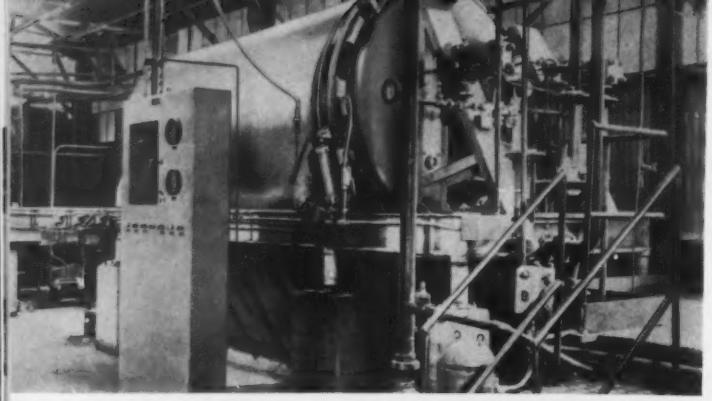
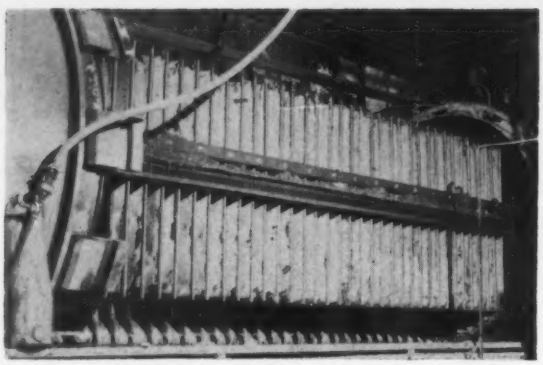
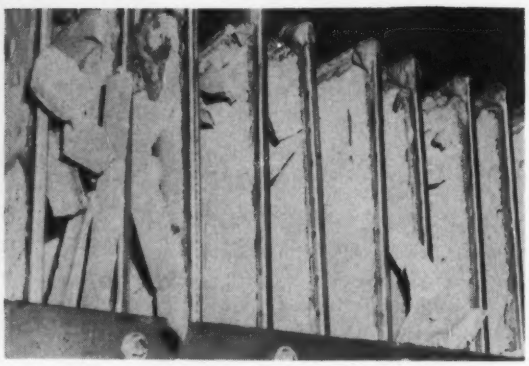


**AT SIMPLE PRESS** of start button (on panel left), timers take over multi-step task of precoating filter, filtering, air purging, opening unit, shaking plates, and closing filter. Cycle is repeated 24 hr. a day.





**FILTER TANK** fully retracts on rails. Left photo: Thus exposed, plates are ready for automatic vibrators to shake out cake (about 1-in. thick). Right: It falls cleanly from plates, dropping into trough for removal by screw conveyor. Filter tank then closes and next filtration cycle begins.

# Now—Automatic Filters Take Over

**—bringing almost triple output. Operator merely stands back and 'keeps an eye' as robot conrols carry out multi-step action . . . Why and how of programmed filtering at VOP, and the payoff facts**

IF YOU SEEK to boost efficiency in filtration, then consider the fine points of the fully automatic filter shown in the accompanying photos.

Here, automation is won with a specially designed fast-action, heavy-duty filter (Sparkler) that works hand-in-glove with a pre-set timed-program controller (Taylor's Flex-O-Timer) sequencing filtering operations.

In working out the new system, special features had to be engineered into the filter. Thus made automatic were: (1) Retraction of filter tank (to quickly open filter and expose filter elements), (2) vibration of elements (to drop filter cake), and (3) action of V-bottomed hopper with screw conveyor (to dispose waste cake).

Further, free-flow type 100%-supported mesh filter elements are employed, eliminating filter cloths. The smooth reinforced surfaces of these elements promote the automatic shake-out.

With these new features, all the filtering operations—pre-coating, filtering, purging, drying, opening filter, vibrating filter elements, closing unit, and re-cycling—are sequence-controlled by on-off program timers operating through relays.

The company employing this new system—Vegetable Oil Products Co., Wilmington, Calif.—filters 19,000 lb. of crude copra (coconut) oil per hour. And it lists these gains:

▶ **Multi-step filtering now fully automated.** Operator jabs a pushbutton, and let's timers take over instead of manpower.

▶ **Productivity almost tripled.** Each of two 35-plate filters clarifies as much as 19 lb. of oil per sq. ft. of filter surface per hour (instead of the former 7 lb.). Total filter area of each unit: 1,120 sq. ft.

▶ **Savings on filter cloths**—none being needed, since filter is designed with permanent-type fine-mesh filter media.

▶ **Clarity of oil controlled** more uniformly by eliminating errors due to human element.

▶ **Operations more sanitary.** Formerly, job of opening filter was done manually, and cake tediously scraped from plates and hauled away—a messy job.

▶ **Working conditions more pleasant,** because totally sealed filter prevents escape of hot, acrid oil fumes.

Yesterday's operation at this plant

**DON STEWART and FRANK PASSALAQUA**
Respectively, General Superintendent, Vegetable Oil Products Co., Wilmington, Calif., and Vice-President, Sparkler Mfg. Co., Mundelein, Ill.

# JOHNS-MANVILLE ADSORBENTS

Now you can turn to one major source of supply for your speciality adsorbent needs. Johns-Manville introduces Celkate® synthetic magnesium silicates and Micro-Cel® synthetic calcium silicates—first of a new line of adsorbents developed for a wide range of uses in industry.

Painstaking laboratory tests and actual plant operations have proved the efficiency of these adsorbents in removing free fatty acids from vegetable and animal oils, solvents, and lard . . . in removing color and odor from lard, edible oils, naphthalene, stearates, and kerosene.

The unusually light color of Celkate and Micro-Cel make them adaptable to countless industrial sorption problems. They provide distinct flavor improvements in the processing of many foods. They are also used in the sorption of soluble iron from glacé syrups.

Next time you need adsorbents or assistance with a related problem, contact your nearby Johns-Manville Celite* engineer first. After studying your problem he can offer specific recommendations or refer it to the Johns-Manville Research Center for additional analysis. Send the coupon for his location and more complete information. You obligate yourself in no way.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

**JOHNS-MANVILLE** JM PRODUCTS

| SOME TYPICAL PROPERTIES | | |
|---|---|---|
| Type | Micro-Cel synthetic calcium silicate | Celkate synthetic magnesium silicate |
| Color | off-white | off-white |
| loose weight (lb/cu. ft.) | 12.7 | 13.5 |
| Absorption, % by wgt. | 260 (water) | 170 (oil) |
| pH | 9.6 | 7.5 |
| Wet density (lbs/cu. ft.) | 17.4 | 22.5 |
| 150 Mesh (residue) | Trace | Trace |
| Moisture % (free) avg. | 6.5 | 3.5 |

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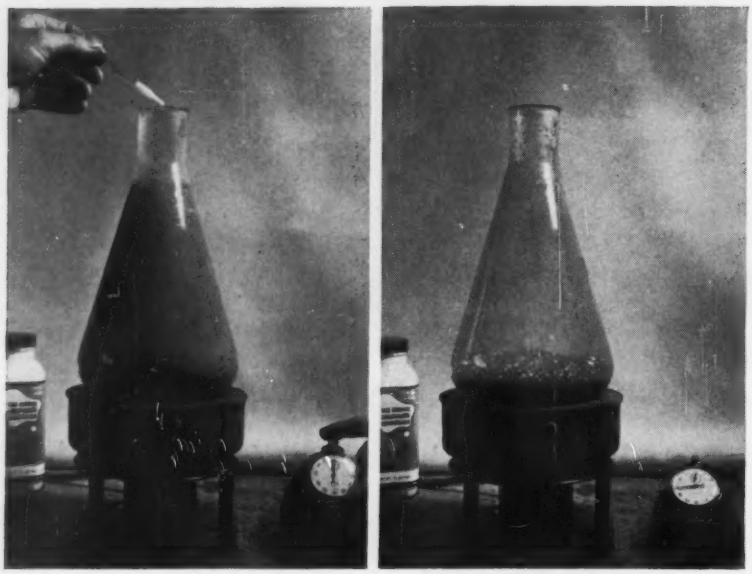
**SILICONE NEWS from Dow Corning**

# Stop Foam Fast



## Dow Corning Silicone Defoamers Increase Production, Cut Costs

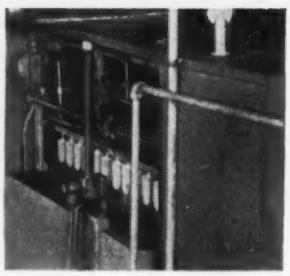
You can't beat Dow Corning silicone defoamers for foam control. Job-proved to be the fastest, most efficient and effective foam killers ever developed, Dow Corning defoamers speed processing time, reduce product waste, minimize maintenance and eliminate the chance of boil-overs and fire hazards.

Easy-to-use Dow Corning silicone defoamers eliminate troublesome foam in the processing and packaging of foods, beverages, syrups and antibiotics. Highly effective at low concentrations, they knock down a mountain of foam and minimize recurrence, without contaminating the product.

Odorless, tasteless and physiologically harmless, Dow Corning Antifoam A may be used in nonstandard foods at concentrations up to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 31 ppm.

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5524.

IN WINE FERMENTATION



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was not really old. In fact, it was fairly modern compared with many systems still in use. It consisted of time-and-labor-consuming jobs of opening and closing valves, disconnecting filtration connections, removing waste filter cake from plates, hauling away cake, and hooking up filter for re-cycling.

In contrast, today's filter system clarifies oil from expeller, readies it up for further refining—bleaching and deodorizing. It's always operating—24 hours a day, five days a week. ▶ **It's pertinent that these automatic filters can also be used to clarify wines, beers, vinegar, fruit juices, etc.**

In a typical operation, process timers sequence-control the filtration steps by time-delay opening and closing of electrical contacts activating pneumatic valves, pump, screw conveyor, and hydraulic rams. Here is the routine:

Operator presses start button to begin operations, whereupon robot cycle timers swing into action through time-delay relays, activating pneumatically operated valves and starting pump for re-circulation of 180-190F. oil through filter and 5,000-gal. holding tank.

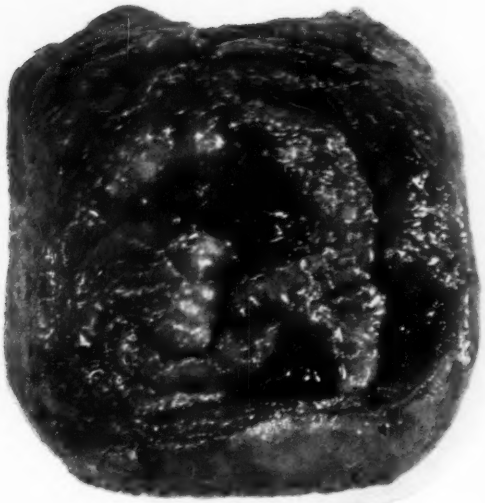
After 2½-min. precoating of filter plates (oil is clear), another time-delay relay stops timer. A relay is energized to close pneumatic valve to holding tank and open the one to the 5,000-gal. storage tank.

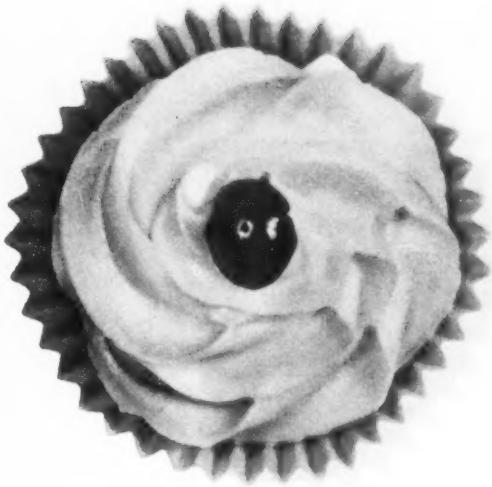
Filtration cycle—clarifying oil from expeller—starts, and it's timed for 1 hr., when pressure in filter builds up to 100 psi. Timer then kicks out, stopping pump and re-positioning valves for air-purging of unfiltered oil heel through filter plates and drain valve tied into recirculating line to holding tank.

System remains on oil draining and drying (filter cake) cycle for 10 min. Then relays are time-energized to actuate hydraulic rams that first open filter's stationary cover and then retract filter tank. In retracting, tank's four wheels ride two rails.

With filter in open position, timer automatically resets. It starts pneumatically operated vibrators (one on each side of filter), linked to perforated filter plates by rods, to shake filter cake loose from plates for ½ to 1 min.

During this time, filter cake drops into the V-bottomed hopper, from which it's discharged by worm-screw conveyor. Then, in sequence, timers operate hydraulic rams that automatically seal filter. And with the filtration cycle complete, timers reset for a new run. —*End*





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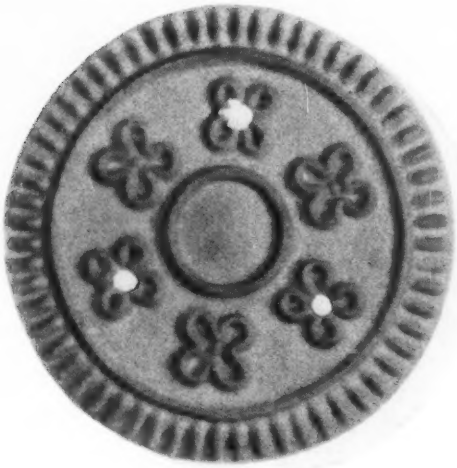

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**HERE'S WHAT DI-CEL DID FOR A LEADING BAKERY:** Reduced handling costs by 20-25%. Reduced package material costs by 12%. Cut spoilage by more than 6%. These are the **actual** results achieved for a leading Midwest bakery by Di-Cel®, a new packaging system developed by Container Corporation. Provides unique packaging flexibility for a dozen different types of bakery items. In addition, bakery items can't roll or break in transit. Tops are fully exposed, instead of sides, for maximum sales appeal. Di-Cel also available in nested, tapered tray styles.

**CCA CONTAINER CORPORATION OF AMERICA**

Chicago 3, Illinois, and key marketing areas. **FOLDING CARTONS SHIPPING CONTAINERS SEFTON FIBRE CANS PLASTIC PACKAGING**

*CLINTON*
*can do it with CORN*

# destination?

## a candy bar or a wonder drug

### Clinton Products go into the making of many good things. Yours?

It has been said, "Wherever you may be and whatever you touch, one or more products of corn enter into its manufacture." The fabric from which your shirt is made was woven with the aid of starch. Starch gave it the fine finish at the laundry. The cigarette you smoke, the magazine you read, the food you eat, the beverage you drink—yes, the candy with which you treat your youngster or the antibiotic in your doctor's prescription depended in some way on a product that was made from corn.

Corn is our business at Clinton. In our modern plant we produce the finest of products from corn—under the strictest system of quality control. And, Clinton research *today* improves *tomorrow's* product for you.

### Clinton Serves the FOOD Industry

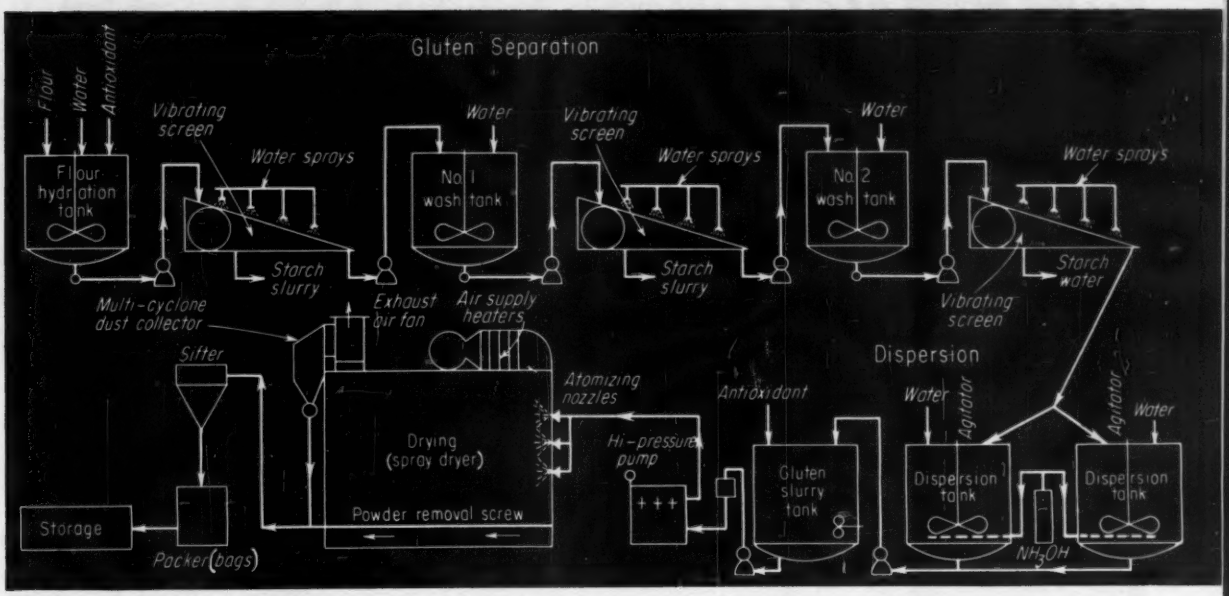
Clinton corn syrup and dextrose are used by leading packers of fruits and vegetables to improve the color, flavor and texture of their products. Clinton's uniformly controlled, quality products will meet your manufacturing requirements. Consult your Clinton salesman. He will provide product information, arrange for prompt technical service, or assist you in any way possible.

**CLINTON CORN PROCESSING COMPANY**
**CLINTON, IOWA**

**CORN SYRUPS**
**DEXTROSE • STARCHES • DEXTRINS**
**SUGARS • OILS • LACTIC ACID**
**AND OTHER PRODUCTS FROM CORN**

**CLINTON**

*If you can do it with CORN you can do it better with CLINTON*




**HOW NEW PRODUCT IS MADE.** Gluten from wheat starch operation is washed (top), then slurry is fed to agitator-equipped dispersion tanks (above, right) where ammonium hydroxide is added to raise pH. Cream-like slurry is then spray dried (left) to give high-quality flour-like material that is bagged for shipments.

## *Special Dispersion*

# Makes Better Dry Gluten

**Improved process overcomes stickiness, enables raw product to be spray dried—meaning minimum damage to initial properties**

CHALK up another first for spray drying—vital gluten, a product that formerly required high vacuum or time-consuming tray drying.

**It's done by a recently developed process in which the gluten is first dispersed to a cream-like consistency, then pumped at high pressure through nozzles of a conventional horizontal spray dryer.**

Dried product (Midsol) has 83% protein, is free from foreign odors, tastes, and contaminating substances (Table I). It's texture is similar to flour or milk powder, so needs no grinding when used to upgrade second-grade flour.

The dry gluten retains all of its native properties, and regains its original vitality or elasticity upon reconstitution with water. And the remixed "gum" cannot be distinguished from native material and readily forms a cohesive elastic mass.

### Now In Production

First commercial installation is at the Atchison, Kansas plant of Midwest Solvents Co., that previously manufactured high-quality devitalized gluten for production of MSG.

With introduction of the Steffen's waste liquor (from beet sugar production) process, for manufacture of MSG, its market for the devitalized product declined accompanied by falling prices.

Company executives also observed that a closely allied product—vital gluten—was enjoying a steady growth and commanding a good price. This dried product is a source of extremely high quality protein for fortification of cereals and other food products.

But present processing methods,

**TABLE I—MIDSOL GLUTEN Has Large Percentage of High Quality Protein**

| | Constituents (Per cent) | Particle Size | |
|---|---|---|---|
| | | Mesh | Percent |
| Moisture... | 5.50 | Over 60 | 6 Max. |
| Protein (N×5.7) | 77.15 | Over 80 | 29 |
| Crude Fiber | .32 | | |
| Starch..... | 7.16 | 100 | 22 |
| Fat (Ether Extract) | .80 | 140 | 2 |
| Ash..... | .98 | | |
| NFE..... | 8.09 | Through 140 | 41 Min. |

Let
Rotor Lift
Help You
GEAR UP
In... '60
For BETTER
PRODUCTION

Food manufacturers must increase production efficiency to capitalize on the rapid increase in family units expected during the early 1960s.
ROTOR LIFT elevating and conveying is the answer.
ROTOR LIFT, original and finest vertical screw elevator, handles all dry, free flowing bulk materials—
MORE SAFELY
MORE DEPENDABLY
MORE ECONOMICALLY
. . . Capacities up to 6,000 CU. FT. PER HR.
8
BASIC
TYPES
4 DIAMETERS
World's Largest Manufacturer of Vertical Helicoid Screw Elevators
Write for ENGINEERING CATALOG
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SUPPLY and MACHINE WORKS
OKLAHOMA CITY, OKLAHOMA



TABLE II—HOW NEW PRODUCT Compares With Previous Vital Glutens

| Baking Test | Dried Gluten Products | | |
|---|---|---|---|
| | Midsol | Sample A | Sample B |
| Absorption (percent) | 95.2 | 95.2 | 95.2 |
| Dough quality | Excellent | Excellent | Very good |
| Dough action | Excellent | Excellent | Very good |
| Oven spring | Excellent | Very good | Fair |
| Loaf volume (1 lb.) | 5300 | 4410 | 3700 |
| Texture | Excellent | Excellent | Good |
| Grain | Excellent | Excellent | Good |
| Color | 97 | 97 | 97 |
| Flavor and aroma | Normal | Normal | Normal |

employing high vacuum or tray drying, weren't entirely satisfactory since the dried product had to be ground to attain desired particle size for incorporation into foods. Why, they reasoned, can't gluten be spray dried?

Big problem here was overcoming adhesiveness of the raw gluten in the suspension to be dried without degrading quality of final product.

## Pinpointing the Method

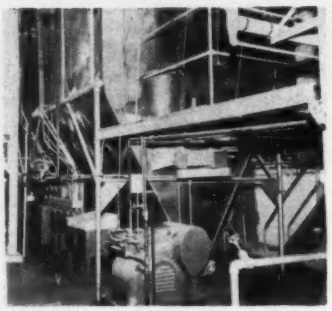
The new process, developed by Buflovak Equipment Div., Blaw-Knox Co., Buffalo, N. Y., overcomes this difficulty by producing a dispersion that is easily pumpable with any conventional pump. In addition, it has:

1. Reduced manufacturing labor.
2. Sped production.
3. Improved quality of the dried gluten.

In operation, (see flowsheet) a suspension of raw gluten, at about 30% solids, is washed and diluted with water. Ammonium hydroxide is added in sufficient quantity to raise the pH to 9-10, then suspension is vigorously agitated to effect complete dispersion (approximately 15-18 min. for a 400-gal. batch). Resulting dispersion (11-13% solids) is free-flowing, light yellow in color, with the consistency of medium cream. It maintains this free-flowing, non-adhesive form as long as the above pH is maintained.

Dispersion is now pumped (4,000 5,000 psi.) to a Buflovak horizontal, high-velocity spray dryer, operated similarly to the drying of milk. Atomization is through a nozzle seleceted to give desired fineness in finished product. Inlet air temperature is 450-470F., and exhaust temperature 180-200F.

Under these conditions discharged product is a fine, white, free-flowing powder containing 4-6% moisture. Ammonia present in the dispersion is completely stripped from the particles during drying.



**HORIZONTAL SPRAY DRYER** converts dispersed gluten to free-flowing powder containing 4-6% moisture. Dispersion is fed to spray nozzles in unit by high-pressure pump (above).

In the drying process particles of gluten quickly pass through the sticky, gelatinous state to dry powder while suspended in the controlled air stream. Final product has a texture similar to spray dried milk powder and is discharged from dryer to bagger by means of conventional screw conveyor. A multiclone, multiple cyclone type dry dust collector prevents powder losses in drying air. A time cycle flapper valve, similar to the one used on milk dryers, is employed as the seal between dust collector and discharged conveyor.

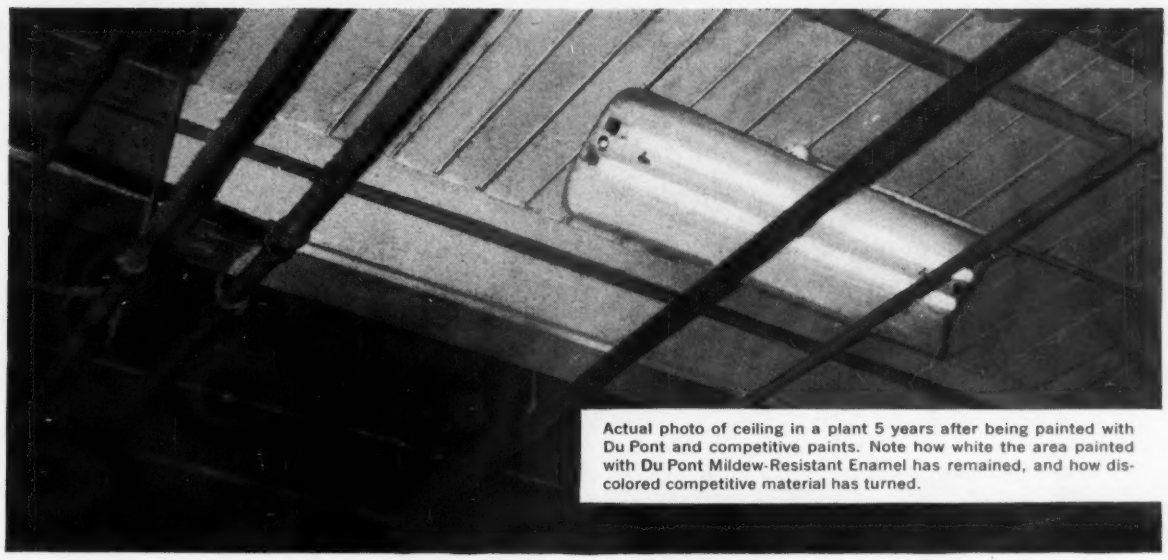
## Has Outstanding Properties

The spray drying technique results in a product with uniform size particles having a hollow, spherical shape. Grinding and sizing operations are eliminated. The product has unusual resistance to oxidative rancidity, and retains its vital and reconstitutive properties over long periods of time.

When used as a flour fortifier in baking, the new product gives a remarkable improvement in loaf volume (Table II). In addition, it imparts other properties which are equal or better than glutens produced by other existing techniques.

*—FE Staff*

# THE PROTECTION LASTS WITH DU PONT MILDEW-RESISTANT ENAMEL



Actual photo of ceiling in a plant 5 years after being painted with Du Pont and competitive paints. Note how white the area painted with Du Pont Mildew-Resistant Enamel has remained, and how discolored competitive material has turned.

## *It's odorless! Cuts maintenance costs!*

**Solves mildew and maintenance problems in hundreds of food plants**

Tests prove that in most types of food processing plants, Du Pont 881 Mildew-Resistant Enamel Oyster White effectively retards mildew formations for months . . . eliminates the need for constant cleaning and scrubbing. It also resists chipping and cracking . . . stays bright looking. Like all Du Pont Maintenance Paints, it's pre-tested until perfect for your job. For complete information, mail the coupon . . . now!

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Wilmington 98, Delaware

Gentlemen: Please send me, without obligation, free literature on how to combat mildew.

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## *Is Packaging Machinery Economical Enough?*

*Economy is a favorite subject of equipment buyers who are looking for ways to cut their costs. As a result, everybody talks economy because everybody wants economy. But how "economical" is economy supposed to be?*

*Obviously, your product has to look good to the consumer. Yet it must go into the package fast and with the least cost. The more time, labor and money it takes, the less you have left for profit.*

*With costs and competition going the way they are, economy has got to be a lot more "economical" than it used to be. Not only for products you're already packaging automatically, but for those you haven't even considered. Because* automatic *packaging saves you money and improves your competitive position. That is, if it's economical* enough.

# HOW *ECONOMICAL* DO YOU THINK PACKAGING MACHINERY SHOULD BE?

Take the example of a machine that automatically forms, fills, and seals bags—it can package anything from hardware to peas and beans. Your product may be entirely different, but look how much economy you must get from the packaging machine itself.

The machine should be simple in all ways. Without unnecessary complexity, it can do its work better and with less cost. And that savings in time, labor and care add to your profit.

**You can really save with the Triangle Bag Former, Filler and Sealer —basic single-tube design . . . no involved adjustments . . . needs less operating attention and maintenance than normally expected.**

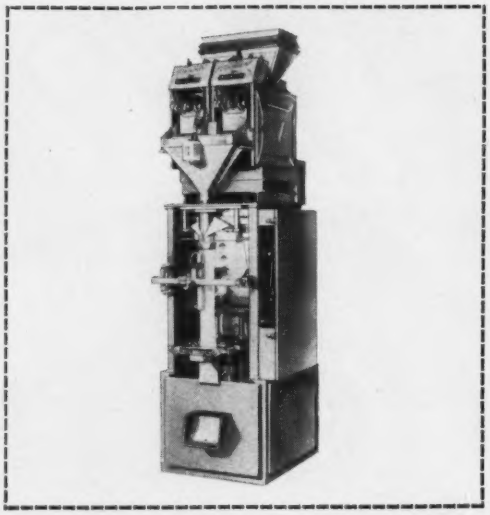
The machine should be fast. Because greater output per minute costs less per unit. And that lower cost gives you competitive advantage *and* more profit.

**You can really save with the Triangle Bag Former, Filler and Sealer —55 bags per minute output—consistently . . . equal to complex twin-tube designs in many cases.**

The machine should be versatile. Your line already includes more than one product in more than one package size. And, there are even more in the future. Bagging materials will change as well. But a new machine for each is not economical. Nor is costly downtime for machine change-over.

**You can really save with the Triangle Bag Former, Filler and Sealer —handles all heat sealable materials . . . fast, simple change-over without delicate or involved adjustment.**

How *more* economical could packaging machinery be? Simplicity of design, speed of operation and versatility for present and future needs—*these* are the efficiencies that the truly economical machine must have.



Regardless of what kind of product you're packaging, see Triangle when you are considering packaging equipment. We don't make equipment for *every* packaging need, but why take the chance of overlooking the real advantage our equipment offers you.

*Write and describe your packaging needs. Let us send our full color 3-D slides and viewer of the equipment that will do your job (post paid both ways). No obligation, of course.*

35 YEARS

•••••YOU REALLY SAVE WITH•••••

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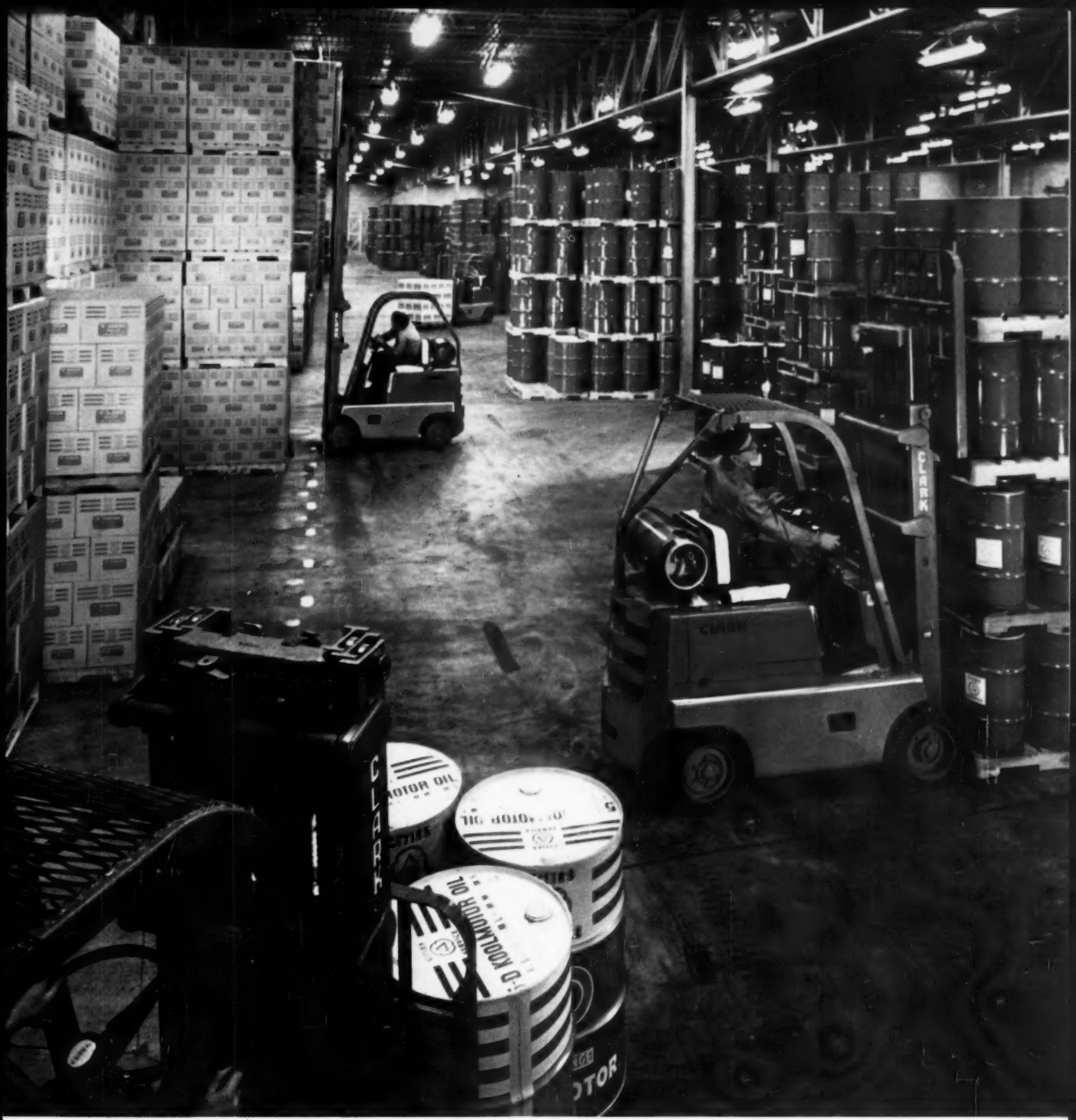


# *Put these trucks to work... without buying them!*

No capital necessary, when you rent from Clark. For one budgeted monthly payment, you get the new equipment you need . . . including all maintenance and repair service.

Because of the modest cost, many companies use the Clark Rental Plan for all their handling equipment needs. Others, faced with peak work loads or seasonal demands, use the Rental Plan to *supplement* their regular fleet. Working capital is saved either way.

You can rent for a week or a year, based on your need. You can adjust your rental period as your requirements change. Most important, you can have the necessary equipment when you need it to keep operating costs down. Complete details of the Clark Rental Plan are available on request. Write: Truck Rentals, Clark Equipment Co., Battle Creek, Michigan.

**CLARK® EQUIPMENT**

**For full details, circle 77 on reader service card**

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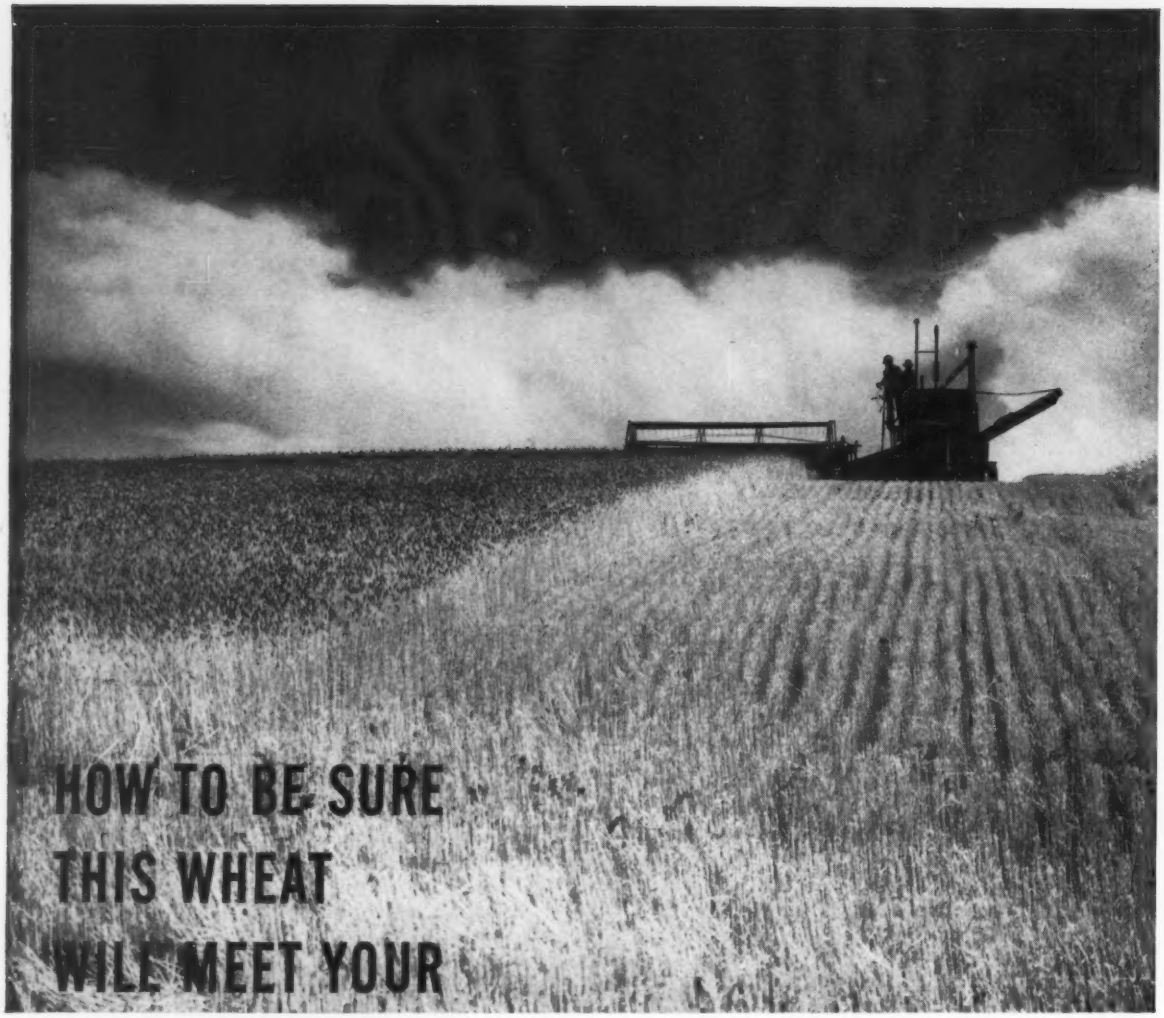


# PROTEIN QUALITY REQUIREMENTS

Bakers of rolls, buns, and specialty breads know that the quality of flour sometimes varies from car to car. And, of course, this can play havoc with the most carefully planned formula. Now protein quality no longer need be a variable. Vicrum, Hercules' Vital Wheat Gluten, can be added to standard baker's flour and as a result you obtain stronger baking performance as needed. Vicrum offers production economies as well. It improves mixing tolerance, and increases absorption. It adds to dough stability during fermentation, make-up, and proofing. The finished product too shows the Vicrum difference through better quality, greater volume, softer crumb, improved grain and texture, and longer shelf life.

We have detailed technical data on Vicrum and its uses. Write for your copy.

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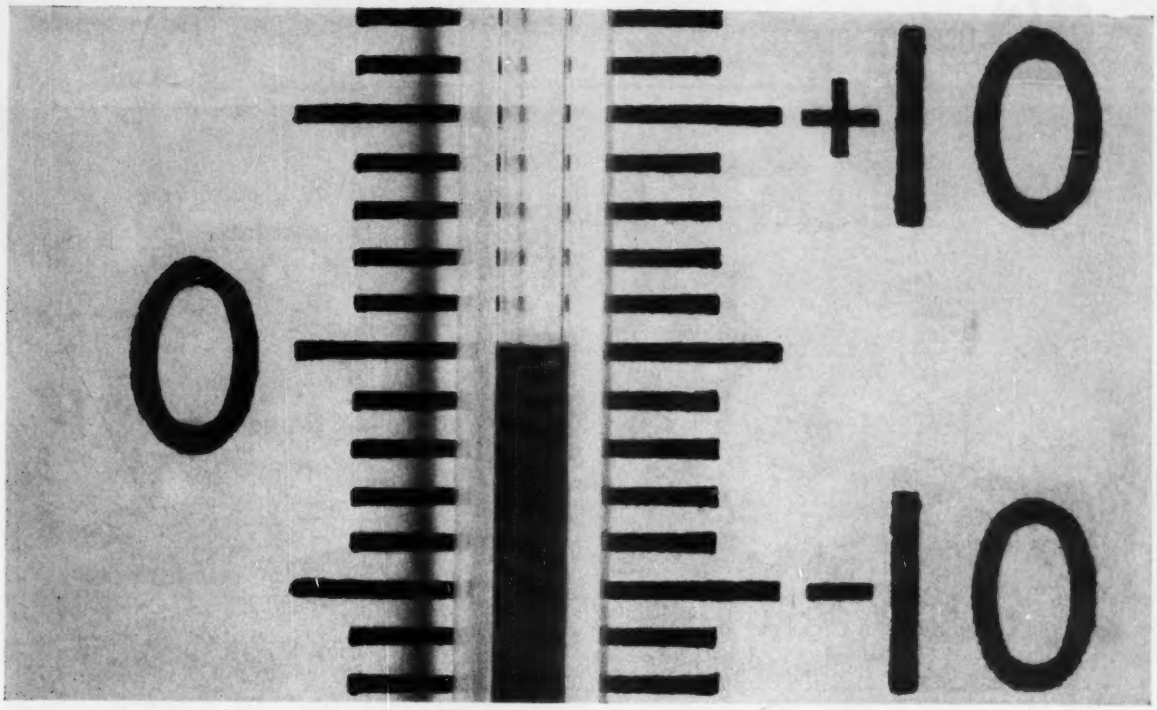


# Zero in on Frozen Foods with genetron®

## SUPER-DRY REFRIGERANTS

From packing house to supermarket, actual zero temperature (or lower!) is *always* needed to maintain freshness, quality and flavor of frozen foods and to prevent spoilage. That's why you can't take chances. Whatever way your frozen foods are transported—by rail, truck or on board ship—however they are packed, stored or sold—they need the sure protection of modern refrigeration equipment . . . and dependable "Genetron" fluorinated hydrocarbon refrigerants.

"Genetron" Super-Dry Refrigerants are available from refrigeration and air-conditioning wholesalers from coast to coast. See your wholesaler. Insist on "Genetron" in *all* your frozen food refrigeration equipment!

### Quick Facts on "Genetron" Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content
- Noncorrosive to standard equipment materials, nontoxic, nonflammable, stable, safe
- Critical and freezing points well outside range of operating uses
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications

**genetron 11** ORANGE LABEL $CCl_3F$ TRICHLOROMONOFLUOROMETHANE
**genetron 12** WHITE LABEL $CCl_2F_2$ DICHLORODIFLUOROMETHANE
**genetron 22** GREEN LABEL $CHClF_2$ MONOCHLORODIFLUOROMETHANE
**genetron 113** PURPLE LABEL $C_2Cl_3F_3$ TRICHLOROTRIFLUOROETHANE
**genetron 114a** BLUE LABEL $C_2Cl_2F_4$ DICHLOROTETRAFLUOROETHANE

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USCOLITE PLASTIC PIPE

# CONFUSED ABOUT PLASTIC PIPE?

## (MOST EVERYONE IS)

Here's your guide:

*U. S. Uscolite® CP acrylonitrile-butadiene-styrene copolymer (ABS-I) pipe* is best where maximum resistance to impact is demanded. It will safely handle most chemicals of industrial importance at working temperatures up to 170°F. This is the major plastic pipe used by chemical processing industries.

*U. S. Uscolite RV polyvinyl chloride (PVC-I) pipe* is best for extremely active oxidizing agents such as strong sulphuric, nitric and chromic acids. This unplasticized, unmodified Type I PVC has high impact strength and handles temperatures up to 140°F, far in excess of normal requirements.

*Uscolite HT (ABS-II) pipe* is a new addition to the resin-rubber compounds. HT stands for exceptionally High Tensile qualities, plus much better retention of physical properties at High Temperatures.

These types of Uscolite Pipe cover all requirements, not only because they are virtually immune to internal and external corrosion, but they are non-contaminating, odorless, impart no taste or discoloration. Because of these qualities they are approved by the National Sanitation Foundation for carrying drinking water. The use of Uscolite results in a saving of appreciable dollars in installation costs and reduction in man-hours. The skills to install metal pipe are not required to install Uscolite. Assembly can be accomplished in half the time. *Not one foot of Uscolite Pipe has ever failed in service when used in accordance with our recommendations.*

A fourth pipe, *UscoFlow HT (ABS-II)* is a black utility pipe, especially suitable where low first costs are a factor. It's a blend of styrene-base resin and synthetic rubber for good impact resistance and high tensile strength. UscoFlow is the ideal answer to builders and large developers who are seeking long-lived, maintenance-free pipe for plumbing.

We invite detailed inquiries or call your "U. S." plastics distributor. He has the *largest* line of plastic pipe and fittings, plus an experienced background to settle any and all questions about which pipe to use.

Mechanical Goods Division

**United States Rubber**

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

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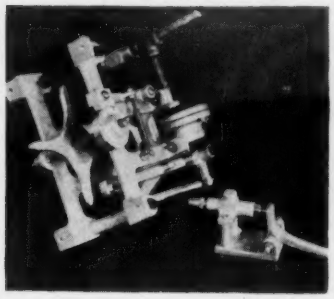
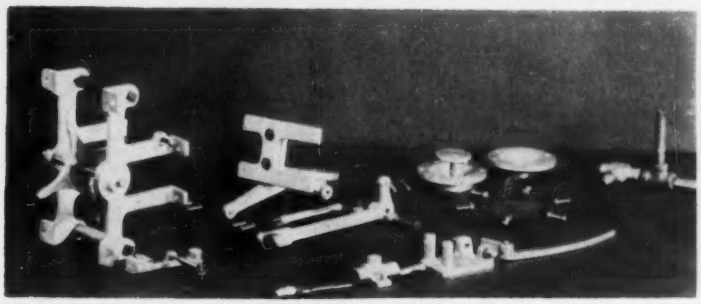


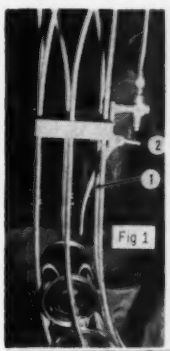


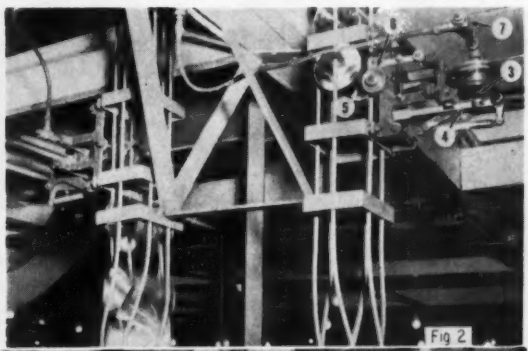
**PNEUMATIC CAN-DROP CONTROL.** Left: Exploded view of two major components. Right: Individual elements (l. to r.) star-wheel, axle and brake drum in frame, brake assembly (foreground); diaphragm, and star-wheel stop-bar frame that's bolted to star-wheel frame (spring-loaded stop-bar has broad-head bolt that acts as adjustable striker-plate for diaphragm plunger); diaphragm shell and plunger (cast/machined aluminum), diaphragm (laminated fabric and Neoprene) which also forms air-tight gasket when shells are bolted together; cast aluminum air bleeder-valve (extreme right) has brass screw-type adjustment to regulate air-input. Center, foreground: Actuator valve assembly composed of cast aluminum valve body, spring-loaded valve core (brass pipe fittings adapted) all machined to close tolerance. This is bolted to two uprights on valve frame. Valve trigger is fixed to frame with two pivot-lock-screws to assure free movement.

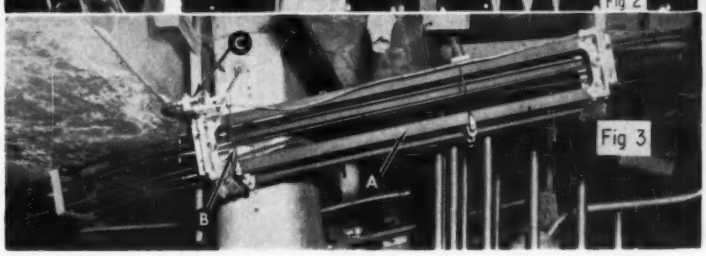
### Do-It-Yourself Foundry

For plant-built machines it is usually best to utilize or adapt commercially available equipment and accessories. However, simple economics limits manufacturers' production to equipment that can be sold in profitable volume. Thus, when the design calls for parts not available, it is up to the engineer to make them.

We faced this problem in fabricating the can-handling unit detailed here. We designed the parts, made wooden patterns, cast parts from scrap aluminum in our miniature foundry, machined and finished the castings, then assembled them (photos above). Commercial parts used are pipe and fittings, nuts, bolts, and screws, springs, star-wheel axle, and rubber diaphragm.—*E. H. Heitfeld, Chief Engineer, Stokely-Van Camp Co., Seabright, Calif.*




## Plant-Made Unit Controls Can Flow

An adequate flow of empty cans is essential to efficient production. Our overhead can-runs provided a satisfactory supply, but demands of different filling stations varied. This irregularity frequently caused jams in the can-runs, resulting in interference in production, additional labor, and damage to cans.

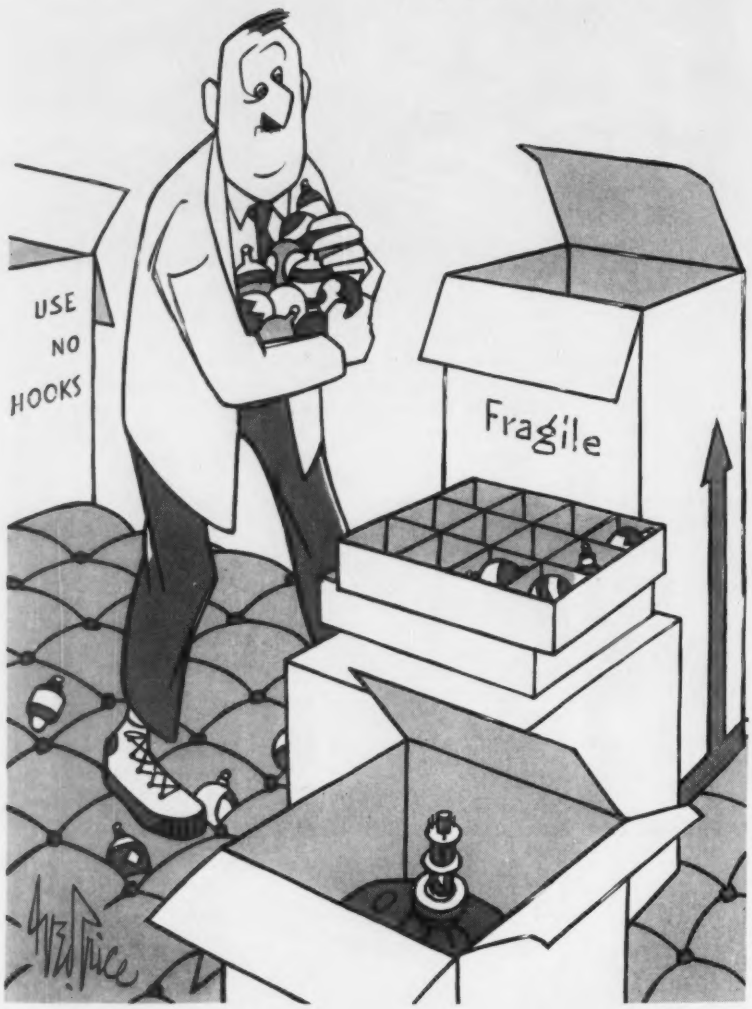
Our hand-filling lines are arranged with a central product conveying belt having 6 filling stations on each side. Each bank of 4 can-drops is supplied by an overhead run.

To improve can-handling at hand-fill stations, we designed and fabricated an automatic delivery system for each can-drop (photos above). This unit obviates jamming in the overhead run and provides a constant supply of 10-15 readily available cans to the filling station. Cans are easily removed because, instead of having the weight of a completely filled drop, there are no more than 15 pressing against the final container in the drop.

Top can in vertical column above star-wheel, is level with bottom of can-run. Thus cans flow smoothly across it, feeding other can-drops in this bank.

Pneumatically operated (20 psi.), the eccentric valve-trigger (1, in Fig. 1) swings into empty portion of can-drop and closes valve (2). Air pressure actuates diaphragm plunger

Another in a series of Hoerner
Corrugated Shipping
Container Experts




THIS IS THE HOERNER SPECIALIST FOR PACKAGING BUSTABLE THINGS

Getting fragile items like Christmas ornaments or TV tubes from plant to point of purchase without a hint of damage is a specialty with Hoerner Packaging Engineers. They use corrugated to cushion the item inside. And to shield the item from the outside. If shipping damage is a problem with your fragile product, don't let it break you. Call or write the Hoerner office or plant nearest you.

HOERNER BOXES, INC.
*Corrugated Specialists for Mid-America*

GENERAL OFFICES: 600 Morgan St., Keokuk, Iowa • PLANTS: Keokuk, Des Moines and Ottumwa, Iowa; Sand Springs, Okla.; Minneapolis, Minnesota; Fort Worth, Texas; Sioux Falls, S. Dak.; Fort Smith and Little Rock, Ark.; Affiliate: Cajas y Empaques Impermeables, S. A., Mexico City D. F., Mexico

## *Practical Ideas*

(3, Fig. 2) and it retracts star-wheel stop-bar (4). Cans drop past star-wheel (5) until they accumulate and open valve-trigger to stop star-wheel. Erratic rotation of star-wheel is obviated by brake (6) which rotates only by pressure of falling can. Pressure of compressed air is reduced to 20 psi. as it passes through bleeder valve (7).

To avoid identical problems and assure constant can supply to our mechanical fillers, we are using a similar can-control system. It is installed below overhead can run from filler to permit accumulation of about 75 cans before star-wheel stops flow.

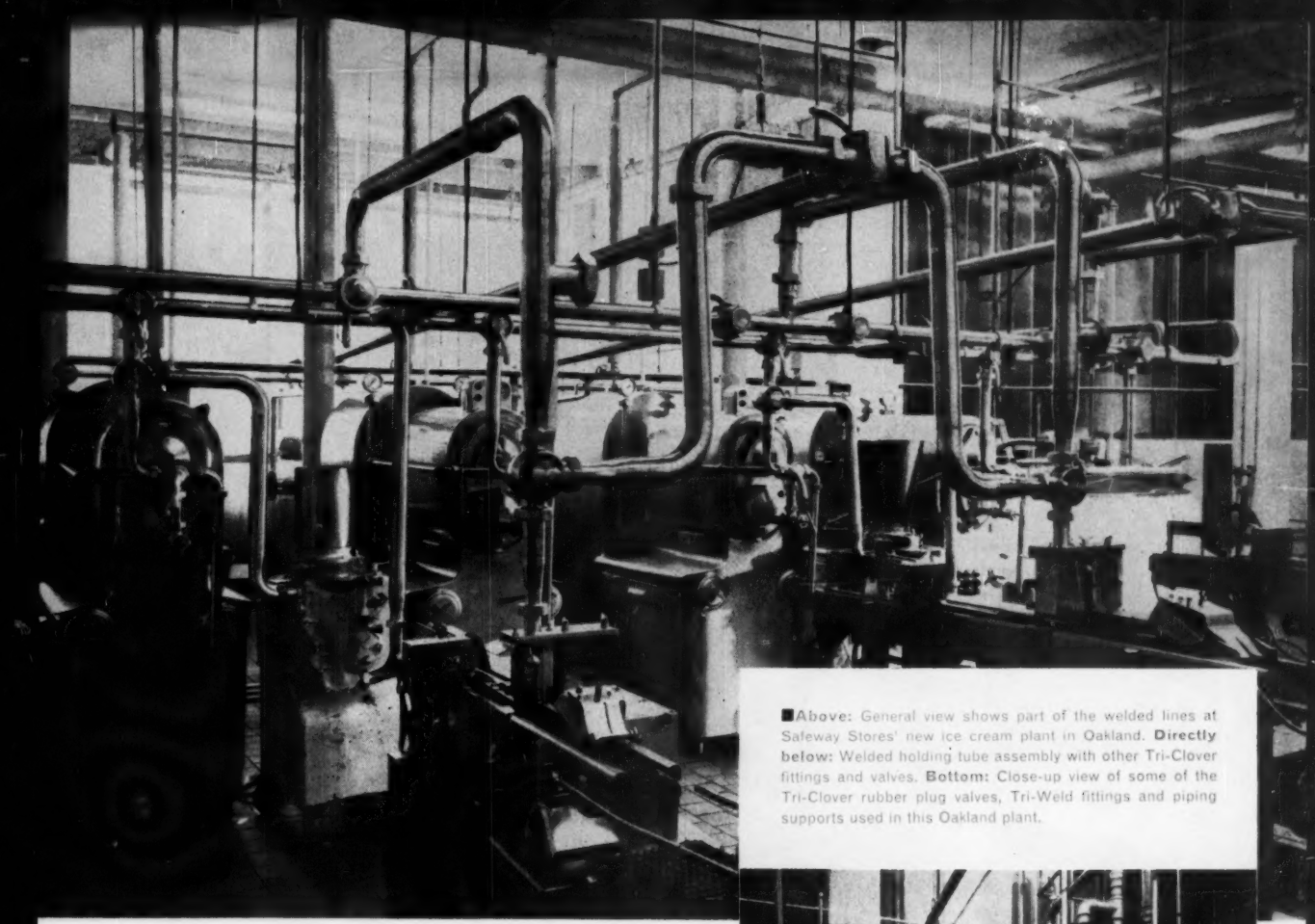
When a filler stops, cans accumulate until spring-loaded frame (A, Fig. 3) is filled. Weight of cans depresses frame, and toggle (B) closes valve (C) to actuate diaphragm-operated stop-bar which stops star-wheel.

Vertical column of cans, above star-wheel, forms a floor in can-run over which oncoming cans move smoothly to other fillers in this bank. —*E. H. Heitfeld, Chief Engineer, Stokely-Van Camp Co., Seabright, Calif.*

## TV Going to the Hogs

Closed circuit television, used to control slaughter and dressing of hogs at Hygrade Food Products' Kingan Div., Indianapolis, is credited with speeding production, cutting delays, and eliminating quality control problems.

Four cameras located at strategic points along a double line, "eye" movement of up to 12,000 hogs/day for four 12-in. monitors in a control room (photo). Here operator calls orders by inter-com to regulate flow of animals. (*Continued on pg. 85*)



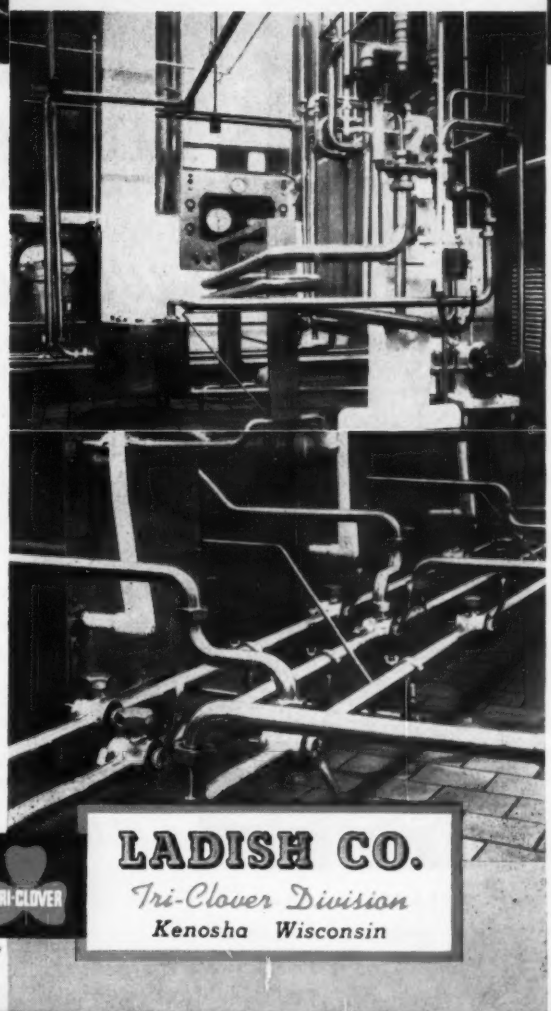
■Above: General view shows part of the welded lines at Safeway Stores' new ice cream plant in Oakland. **Directly below:** Welded holding tube assembly with other Tri-Clover fittings and valves. **Bottom:** Close-up view of some of the Tri-Clover rubber plug valves, Tri-Weld fittings and piping supports used in this Oakland plant.

# SAFEWAY STORES'
## streamlined ice cream installation includes new TRI-CLOVER "TRI-WELD" Fittings and Rubber Plug Valves

Safeway Stores have long been known for modern self-service retailing and efficient operations. In keeping with these progressive methods, their new ice cream plant in Oakland, California, was carefully designed for "streamlined" processing.

As part of its flow design, Safeway installed numerous butt welded stainless steel liquid lines where Tri-Clover "TRI-WELD" welding fittings were used, together with Tri-Clover Rubber Plug Valves for directional control in this plant. These pipelines all were welded right in the plant with newly developed welding machines.

This is another good example of the way in which Tri-Clover fittings and valves "keep pace" with modern processing methods that are being developed by the country's leading dairy and food plants. Let our engineering department help plan your next processing or "C-I-P" installation. *See your nearest Tri-Clover Distributor.*



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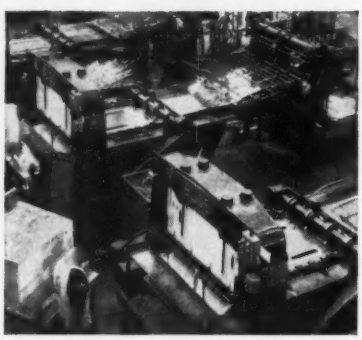
# PINEAPPLE...

## *with a touch of* BLISS

When Dole began to make its own cans, they made about 400,000,000 of them in eleven different sizes in their first year and effected some extremely impressive savings as a result.

One of the reasons is the fact that all of their end-making equipment is Bliss, including these high speed steady-performing strip feed presses.

How much would you save by making your own cans? One way to find out is to ask Bliss. Whether you need a single machine... a bank of related machines... or a complete "turn-key" plant... it'll make sense to check Bliss.



Scrolled Strips for Strip Feed Presses are produced on five Bliss Scroll Shears.

BLISS
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**E. W. BLISS COMPANY · Canton, Ohio**

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PRESSES • ROLLING MILLS • ROLLS • DIE SETS • CAN MACHINERY • CONTRACT MFG.

## *Practical Ideas*

Camera No. 1 is focused on a double line of conveyor-type pens that move hogs into $CO_2$ immobilization chambers. Camera No. 2 views the point where anesthesized animals exit from chambers.

Camera No. 3 follows movement of animals to cold water tank and transfer conveyor leading to scalding tanks. It's here the TV is of greatest value, according to George Harrington, research engineer. Hogs are in the scalding tanks for 6 min., to prepare them for dehairing machines. Should a carcass be overscalded, it results in a loss of meat, or even the entire carcass.

Final camera focuses on hogs accumulating at dehairing machines.—*FE Staff*

### Tagging Last Case of Run Prevents Mixup on Pallet

Detecting the end case of each production run on its way to automatic pallet loaders has been a problem. Obviously, it must be spotted to avoid a mix-up of different cased beers or size cartons on a pallet.

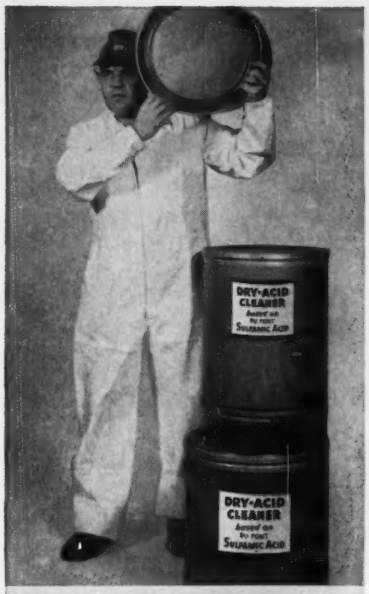
To solves this problem we installed an automatic dispenser that applies a 4-in. strip of aluminum-coated polyester tape to the last case of each run. As this case moves to pallet loader, it passes a photo-electric detector which picks up light reflected from the tape. Then, detector stops infeed conveyor and pallet loader, sounds an alarm. By push of button operator discharges partially loaded pallet and re-starts palletizer.—*Based on talk by Karl M. Strauss, Pabst Brewing Co., at 75th MBAA Convention.*

### PRACTICAL TIPS

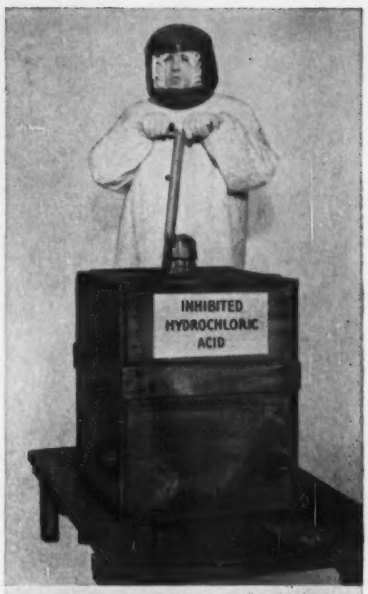
**Pipe corrosion troubles can be averted** by adoption of unplasticized polyvinyl chloride (UPVC) pipe and fittings. Yearly replacement of lines handling sweet pickle brine solution has thus been eliminated by Patrick Cudahy, Inc., Cudahy, Wis.

**Where downspout drains** lay in concrete or macadam, stainless piping will obviate need for subsequent replacement due to corrosive industrial fumes dissolved in rain water.

**Thin, highly reflective stainless steel,** perhaps laminated to lowcost backing, is a most efficient and economical heat shield. Stainless bounces back most heat, even at temperatures well above 1,000 deg. F.


**NEW** sulfamic acid-based cleaners are supplied in light, disposable cartons. They're stored and handled dry ... no spillage or breakage worries.




**OLD**-style liquid acid cleaners—shipped in cumbersome, returnable carboys—require careful handling to prevent breakage.

# ✓Safer, easy to handle

Just one of the reasons why **Dry Acid Cleaners** based on **Du Pont Sulfamic Acid** are gaining wide favor for industrial equipment cleaning: ✓ Safer to handle ✓ Easy to use ✓ No hazardous fumes ✓ Powerful descaling action ✓ Less corrosive ✓ Lower handling and shipping costs.

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Food-Processing Vessels, Pipelines, Gelatin Evaporators, Milk Evaporators and Pasteurizers.

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**MERCK CHEMICAL DIVISION**

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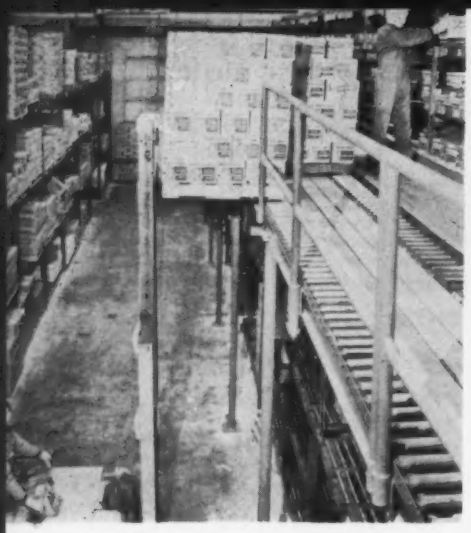
**CIRCLE 87 ON READER SERVICE CARD**



**1 FEEDING STOCK** to automatic lines: High-lift fork-truck spots palleted cases of frozens on feedwalk, from which stockman loads four levels (A, B, C, and D) of flow-racks (right). Rollers in platform enable easy shuttling of goods to proper feed stations. Large low-temp stock-storage area extends on left.

**2 DISCHARGE OF CASES:** At ends of four 60-ft.-long flow levels (left), cases are held by 'escapements' (as seen right on top level), until automatically 'signaled off' onto collector belts (right). There is a photo-eye count of cases released. Top and bottom pairs of collector belts bring goods to convergers (foreground), forming two discharge lines (A&B and C&D). Note 'traffic cop' control (front) that permits only one line to discharge at a time.

# Automatic Warehouse

**This special picture-and-blueprint feature gives you revealing closeup of Jerseymaid's robot order-filling. Sparked by punch-card control, striking system has cut working time in half, lifted delivery output from 500 cases an hour to 2,000**

FOR OUTSTANDING "multiplied" performance, put automation to work!

Demonstrating this theme for the 60s is the striking new automatic, high-speed order-filling system at the warehouse of Jerseymaid Milk Products Co., Los Angeles. Featuring multiple truck loading, the robot setup already has served to reduce Jerseymaid's working day from 23 hr. to 10.

**Our accompanying photo sequence "takes you through"—from initial feed-in of stock to roll-out of route trucks. A separate panel of pictures spotlights the control elements.**

**There follows (p. 90-91) a detailed engineer's blueprint showing both plan and elevation of the flow-lines. Here, circled numbers key directly to the preceding sequence photos, making it easy to locate the pictured points on the layout. Further details at these specific points are highlighted by sub-designations—as (2a), (2b), etc.**

Toting up the time, labor, and cost benefits, President John Thiessen, of Jerseymaid, hails the push-button flow setup as "one of the most ingenious of merchandise-handling systems."

**Feed from stock was formerly 500 cases/hr. But now this has been automated to 2,000 an hour, with a 3,000 rate targeted. Operating two delivery feeds, two trucks are loaded at once—and the system readily can be expanded to load six simultaneously.**

Overall, the warehouse measures 320x100 ft., affording nearly ¾ million cu. ft. of refrigerated space. Incorporated are 120 automatic flow lines for smooth, high-speed coordination and conveying of cases to trucks in proper route-delivery sequence. The company handles more than 350 different cased frozen-food items.

Flexibility is a pertinent feature: At any time, the whole system can be switched to permit manual operation from either of two separate control panels—one in the dispatcher's office, the other in the assembly area.

On the average, the automatic system is now handling 70% of cased goods flowing to trucks. This gives smooth ratio against specialty items manually picked.

## Card System Keys It

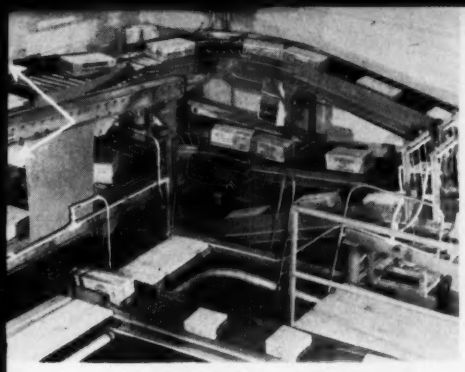
Crux of the automation is an IBM #604 computer and punch-card system. Along with its multitude of relays, the central master control panel—photo (B)—has four memory units (one for each of the automatic flow levels, A, B, C, and D). Through this system it is possible to use one card for up to 99 cases of a single commodity.

A note on the reciprocating gravity conveyors—photo (5): Each length of roller conveyor is set within another frame on rollers. Here, a rotating crank (electric powered) provides 8-in.-range forward-and-back travel at 45 cycles/min. over a very minor slope (⅜ in. drop to 1 ft.).

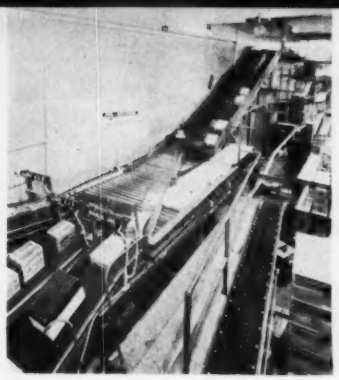
Thus, efficient accumulative movement of cases—rate about 60 fpm.—is achieved. No matter what the weight or size of cases, they carry gently along without risk of smashes.

In the new Jerseymaid development, Mathews Conveyer Co., in conjunction with Rundel Electric Co., handled design and installation, with Robert Fisk and W. Huggins the directing Mathews engineers.

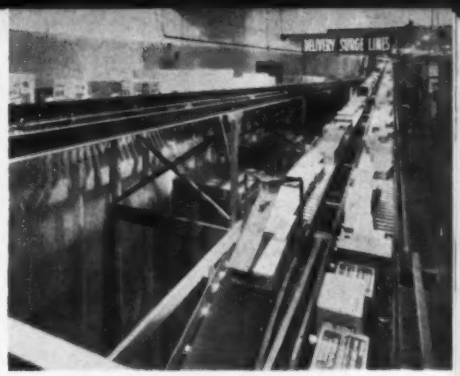
For a prior development in warehousing mechanization, see "Automated Order-Makeup System" (FE Aug. '57, p. 66). —*FE Staff*



**3 CONVERGING CLOSEUP** shows single A&B and C&D lines leaving two 'traffic cop' stations (arrows). Two flows move toward confluence (just beyond escapement switches, far right). Below lower 'cop' is seen Manual-Pick line, which subsequently U-turns and rises to escapement. This station is point of . . .



**4 . . . FINAL CONVERGENCE** of lines (A&B, C&D and Manual), where feed-out of groups of cases is sequenced. Seen just beyond converger is diverter that permits feeding of orders (rear) to either of two rising belts, which move cases on to . . .

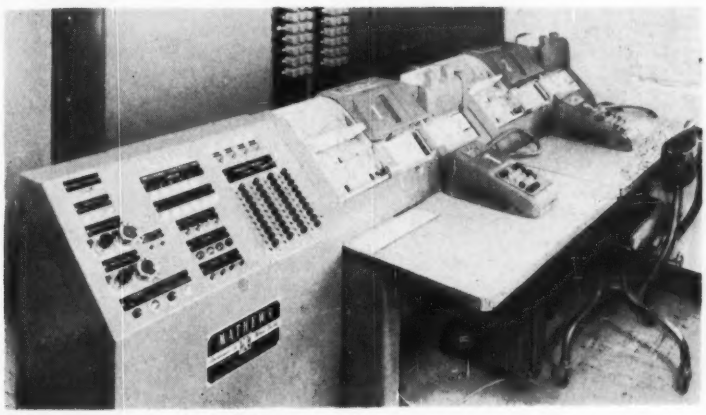



**5 . . . DELIVERY SURGE LINES,** via special reciprocating gravity conveyors. Here, some 600 cases can be accumulated. Coming (left) from final converger, cases proceed to U-turn (rear), then to conveyors (right) discharging down into two . . .

***CONTINUED ON NEXT PAGE →***

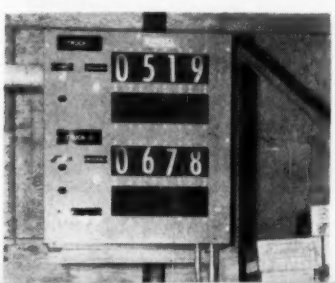
## Focus on Controls

**A CUSTOMERS' ORDERS** are translated by this IBM unit into data punch-cards, which go to dispatcher's office to control action in . . .

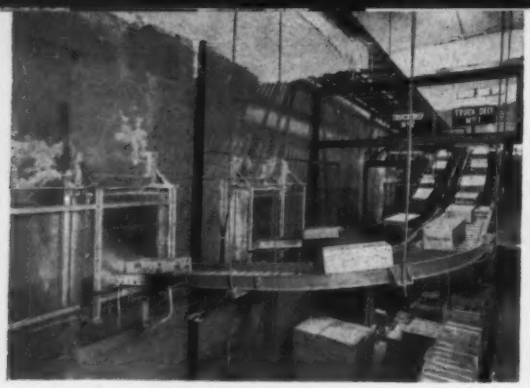


**B . . . AUTOMATIC ORDER FILLING.** This is achieved through modified card-punch units (right), which read card data and thus control escapement of right type and quantity of cases from merchandise flow lines. Unit 1 handles order feed to Truck Delivery Line 1, while Unit 2 releases goods to Line 2. Control panel (left) has four columns of switches for item and quantity selections from four levels (A, B, C, and D) of automatic case flow. Indicator lights show item picked. Included are manual-release buttons for special orders. In cabinet (rear) are seen button-type plug-in relays of control circuitry.

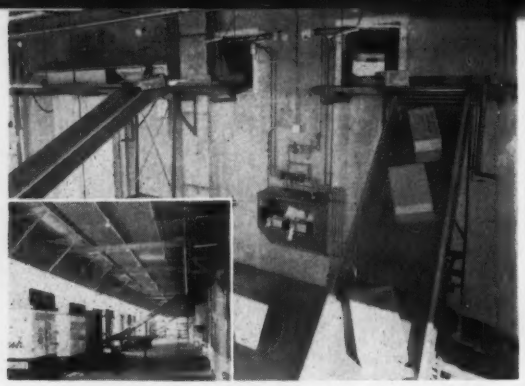
**C SIGNAL PANEL** in working area is IBM-actuated to show orders being automatically filled. Indicated here are orders for Route 5, Customer 19 (Truck 1) and Route 6, Customer 78 (Truck 2). Thus alerted, an order picker consults invoice and collects special items needed to complete order. He puts these on Manual Line, and they join automatically-filled portion of order at final converger.




**D DUMMY CASES**—as at arrow (A)—are placed on line by picker following last case of order. A red dummy tails an order for an odd-number route on Truck Line 1, a blue one an even-number order on Line 2, and a blue-and-white one indicates end-of-route on either line. Dummies are designed to engage a special time-delay switch here at final converging station. This causes diverter (B) to stay in place until dummy passes through, then it swings over to permit feeding on other line.



**6** . . . **TRUCK DELIVERY LINES.** The pair of conveyors carry separate flows of outgoing orders to two refrigerated-storage exit doors (left). When doors are opened, cases feed out to dock area on other side, where they discharge over . . .



**7** . . . **SIDE BELTS TO CHUTES,** which are castered units readily shuttled (inset) to any truck. With control from pushbuttons at edge of dock, cases come off chutes onto 20-ft. conveyors extending into vehicles. These latter conveyors are handy, rail-mounted roller units that progressively retract (out under chutes) as trucks fill. Passage of end-order dummy box trips a signal for print of total case count of the particular order. And at arrival of end-route dummy, loader moves to next truck.



## Chart of System Reveals the Fine Details

Actual engineering of Jerseymaid's automatic system is blueprinted here. Circled numbers key directly to our preceding photo sequence, thus enabling quick reference.

Spotlighted are following features:

**1**—Elevated stock-feed catwalk with pallet roller conveyors. Big low-temp stock-storage area extends to left.

**2**—Banks of 6 commodity flow lines (gravity roller conveyors) 4 tiers high.

**2a**—Escapements for flow lines.

**2b**—Four collector belts feeding to . . .

**3**—Two (top and bottom) live roller conveyors.

**3a**—Traffic control that permits flow of just one line at a time.

**4**—Meter belts that "sequence" the flows to final converger.

**4a**—Stop bars that control traffic.

**4b**—Final (live roll) converger.

**4c**—Automatic diverter, controlled by IBM. It routes orders to . . .

**5**—Two reciprocating gravity conveyors (delivery surge lines).

**5a**—Two belt conveyors that move cases around curve to . . .

**5b**—Two reciprocating gravity conveyors (surge lines).

**5c**—Two belts controlling flow to . . .

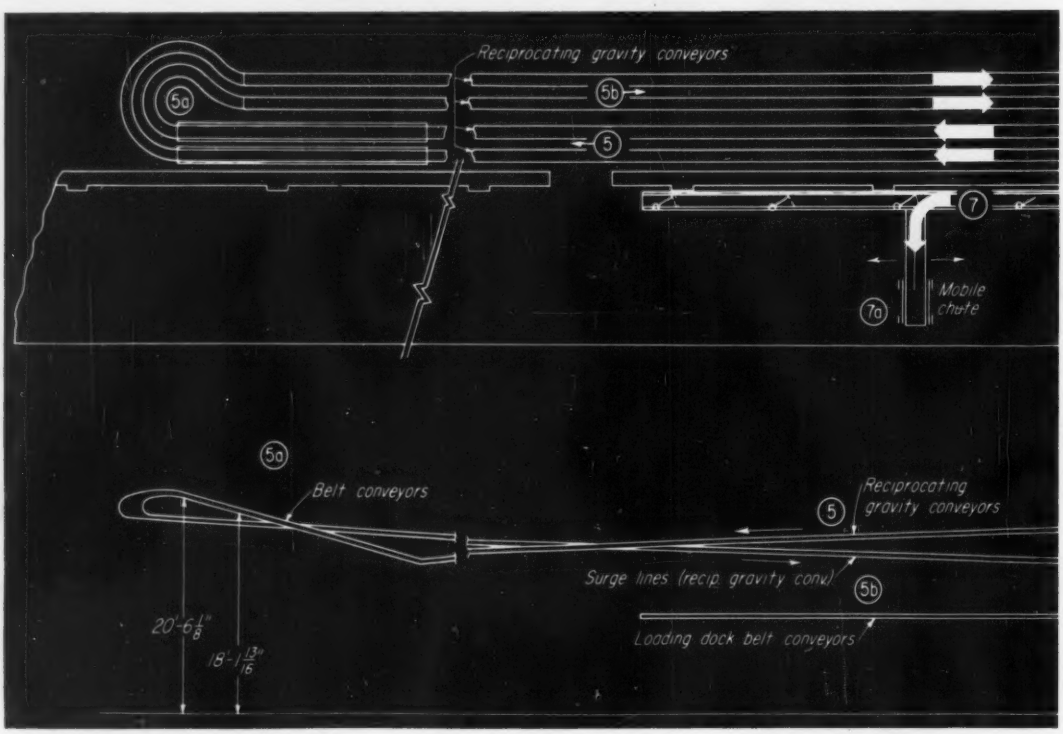
**6**—Two gravity conveyors that move cases through doors in wall to . . .

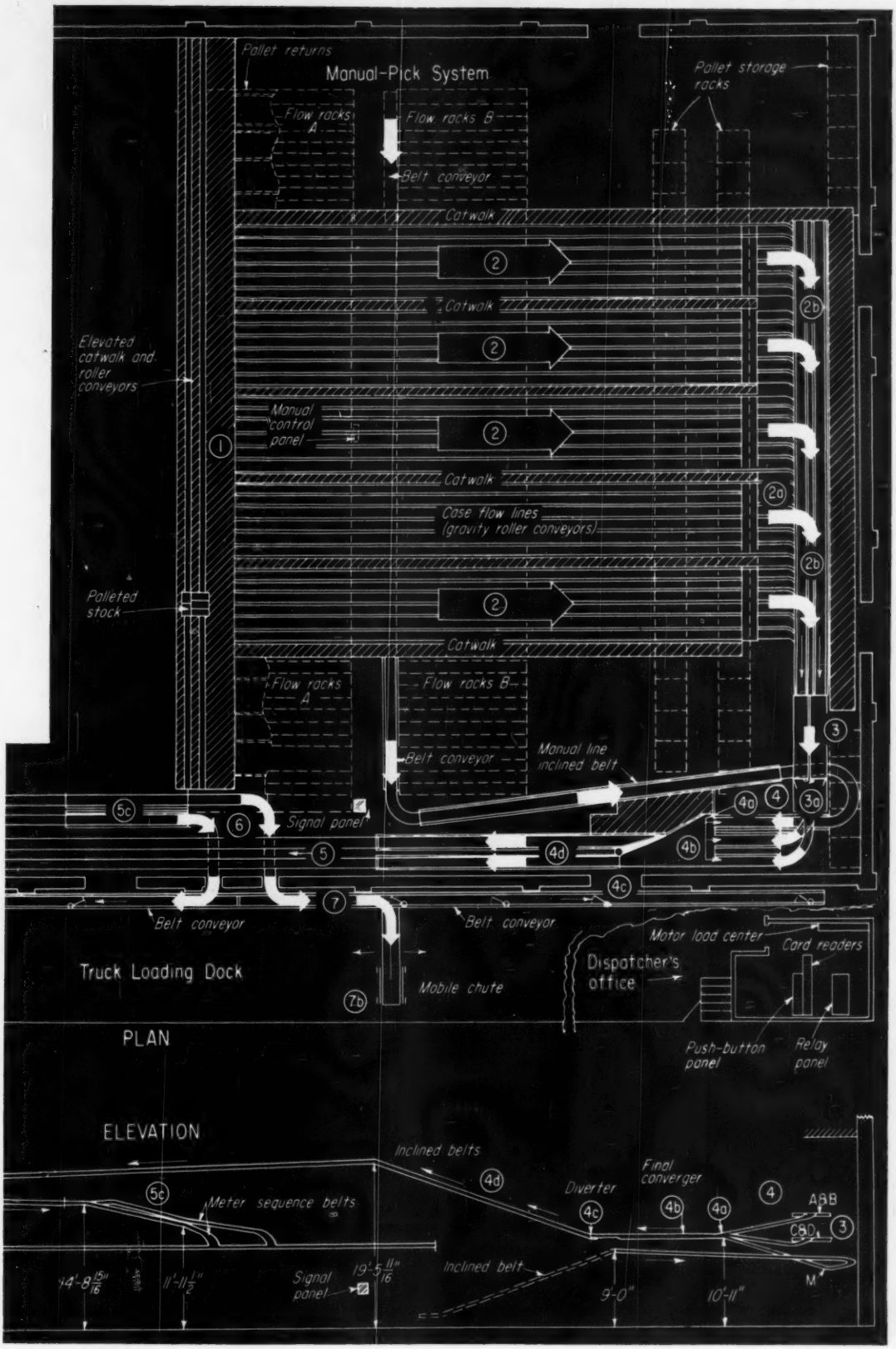
**7**—Two overhead belt conveyors that discharge orders to . . .

**7a** and **7b**—Mobile chutes with 20-ft. retractible roller conveyors that feed into trucks.

Shown, too, are prime components of conjunctive manual system. Here, feedline traverses below automatic levels, passes manual control panel, turns right (beside order-signal panel), then rises to final converging station.

And in right corner of plant (just below) will be seen dispatcher's office.



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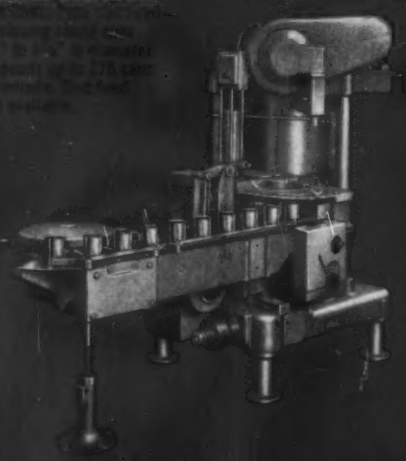
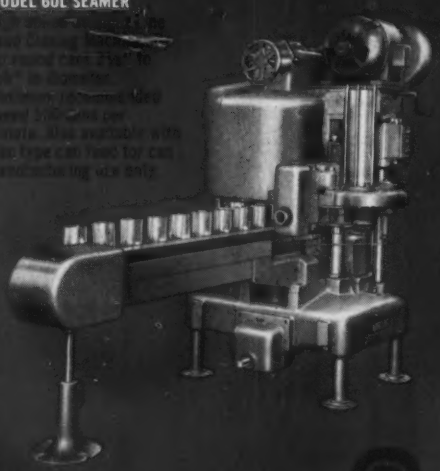
# *Which* ANGELUS CAN CLOSER *for you?*

MODEL 40P-MSLF SEAMER

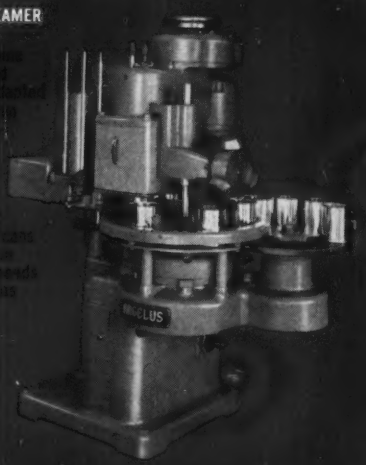


MODEL 50P SEAMER

MODEL 60L SEAMER



MODEL 10P SEAMER

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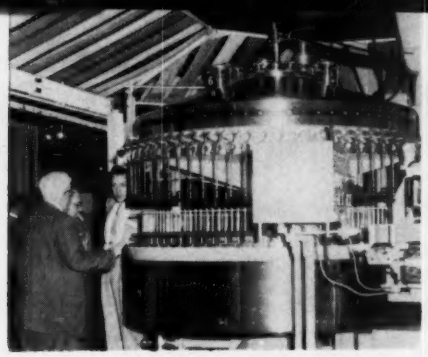
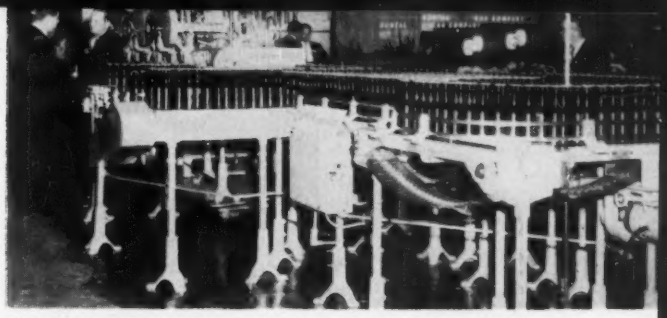


UNIT COMBINING filler (72-valve) and crowner (15-head) handles up to 550 bottles (12-oz.) a min. Features twin rubber-coated infeed screws, low-pressure filling to prevent air pickup, accurate filler-bowl control, counter-pressure filling valves, elongated spider, and adjustable bottle tappers between filler and crowner.—Crown Cork & Seal Co., Baltimore. (329)



NEW ACCUMULATING TABLES consist of multiple rows of flat-top chain conveyors, designed to keep filling or labeling machines running to full capacity. They're hooked to gentle-handling combiner feeding cans or bottles in single-file or several abreast. Pressure gate automatically stops combiner in case of line stoppage.—Economic Mach'y Co., Worcester, Mass. (330)

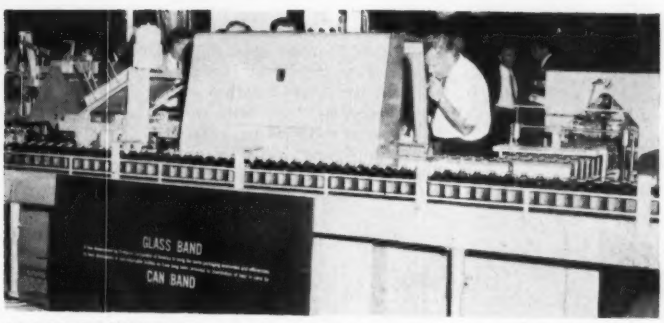
*MANUFACTURING*

# 15 New Packing, Handling, Processing Units

STRAIGHT-THROUGH bottle body and neck labeler handles 160 bpm. Applies labels without interruption on straight-line slat feeding machine. Space-saving unit features easy accessibility for cleaning.—Geveke & Co., Inc., N.Y.C. (331)

**Latest equipment highlights Brewing Industries Exposition in Cleveland. Packaging, handling, controlling, clarifying, fermenting, and cooling devices are ranged by FE camera**

## 6 New Package Machines

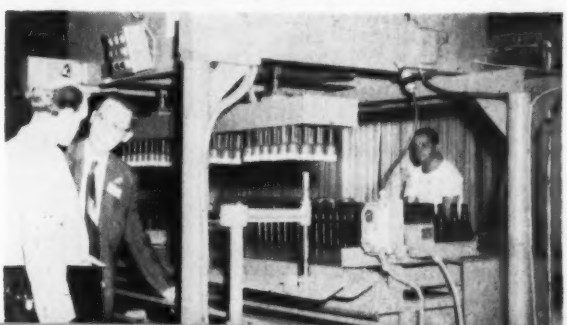



GLASS BANDER forms and inserts two partitions, wraps 12 bottles, locks and glues closure, breaks apart 12-pack, inserts pad between four 6-packs, and loads four packs into carton.—Container Corp. of America, Chicago. (332)

*Turn page for more →*

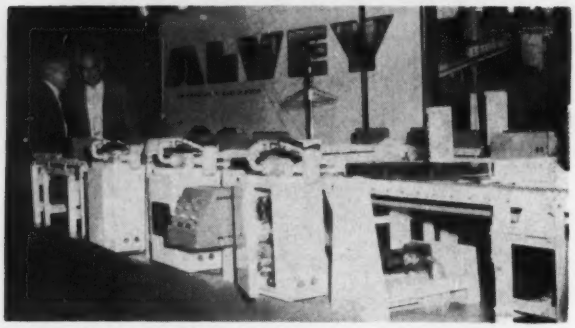
6-PACK MACHINE is adjustable for cans or bottles. It fatures new wrap-around package with dual-action lock. Eliminated is need for glue and compression unit. Speed is up to 50 packs a min.—Continental Can Co., N.Y.C. (333)

3-HEAD BOTTLE UNCASER is air-operated and hydraulically-controlled. Picks up off-center bottles, handles full or ½-depth cases. Uncaser heads are adjustable for different size bottles.—Lodge & Shipley Co., Cincinnati. (334)

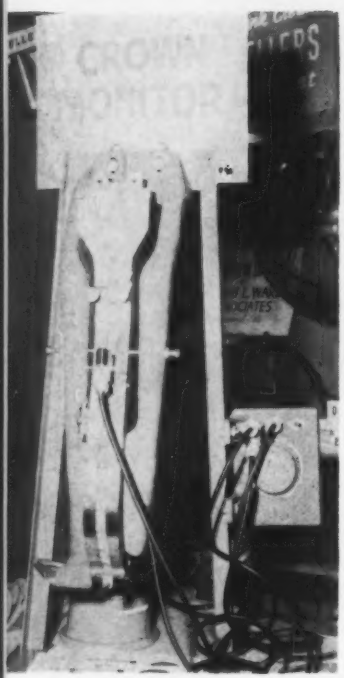


CASE-UNSTACKER operates pneumatically at 45-a-min. rate. It handles loaded pallets stacked 12-14 high. Requires little floor space, no floor openings. —Standard Conveyor Co., N. St. Paul, Minn. (335)

## 2 Materials Handling Systems




ELECTRONIC case-dispatching system employs photo-selector units for automatic reading of codes on belt-conveyed cases. Specific cases are diverted by air-operated plates to pre-selected storage lines. —Alvey Conveyor Mfg. Co., St. Louis. (336)



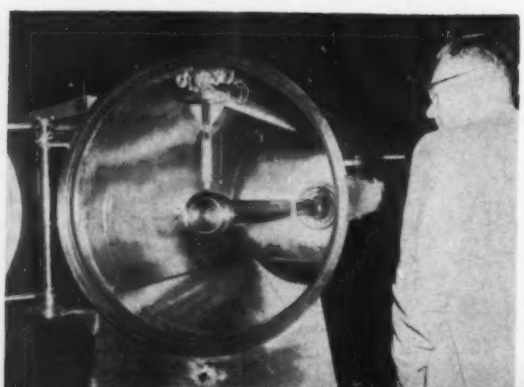
## 2 Control Units

DETECTOR operates photo-electrically to spot lack of crowns or slow-moving caps half-way down chute, then a bell warns attendant. Speeds operations and minimizes uncrowned bottles. — Vis-O-Lite Co., E. St. Louis, Ill. (337)

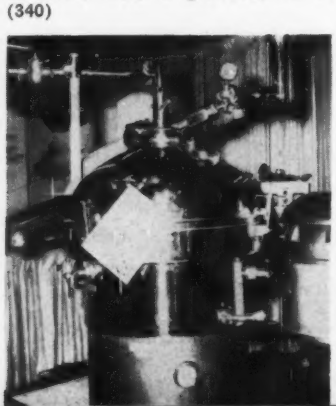
METER measures turbidity in bottled beer to control stability. Comparison instrument reads transmitted-light intensities. Photoelectric system uses single light source.—National Filter Corp., N.Y.C. (338)

## 2 Clarifiers

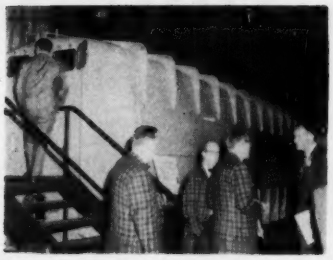
PRESSURE-LEAF FILTER comprises jets that reduce filter-wash time to 5 min. Leaves rotate as jets spray liquid at 60 psi. pressure. Sludge drops through V-shaped trough. Easy-opening door permits interior inspection.—U. S. Filter Co., Los Angeles. (339)



CENTRIFUGAL CLARIFIER is designed for beer and trub worts, wine, juices, etc. It eliminates manual bowl cleaning, running continuously 24 hr. a day. Opening for inspection is required only once every 3 to 5 weeks. Handles 200 bbl. hourly.—Centrico, Inc., Englewood, N. J. (340)



## Fermenter, Cooler, Conveyor Lubricator



JACKETED FERMENTER, semi-rectangular and of pressure type, features smooth, rounded plastic-lined interior and gusset-type sanitary tank supports. Interior cleaning is automatic. Maker says unit provides 10% more capacity, 15% less weight in same cellar space as rectangular tank.—Bishopric Products Co., Cincinnati. (341)

TURBO-PLATE COOLER creates controlled liquid turbulence essential for efficient heat-transfer and self-cleaning of plates. Cools up to 600 bbl. of wort per hr. at operating pressure up to 100 psi.—Louis De-Markus Corp., Buffalo, N. Y. (342)

UNIQUE LUBRICATOR for conveyor chains features central system of feeding soap-base agent. Employed are tanks for concentrate and for electronically controlled dilution. Bank of 10 cam-operated piston pumps tube-delivers diluted lubricant to 10 remotely located chain belts.—Du Bois Co., Inc., Cincinnati. (343)


# Indicating Pneumatic Controller with Greatest Field Serviceability!

1150 Series for TEMPERATURE or PRESSURE

Designed by Robertshaw Engineers as a controller, transmitter, or receiver-controller for process applications demanding precision, economy and serviceability combined, this new unit is packed with obvious advantages:

- Proportional Action — 0.5% to 200%
- Automatic Reset Optional
- Fully Compensated Thermal System

Easily installed without special tools, this new Robertshaw controller offers maximum convenience. Open construction permits components to be removed, replaced, recalibrated on the spot without disturbance to the rest of the unit. Minimum number of pivots for low hysteresis, added sturdiness. All adjustments quickly made by hand; no tools needed. Temperature ranges (in 200° bands) from –30 to +450° F. Pressure ranges 0-20 psi., 3-15 psi. (as receiver-controller), 0-150 psi.

*For complete specifications, ask for XG-757*

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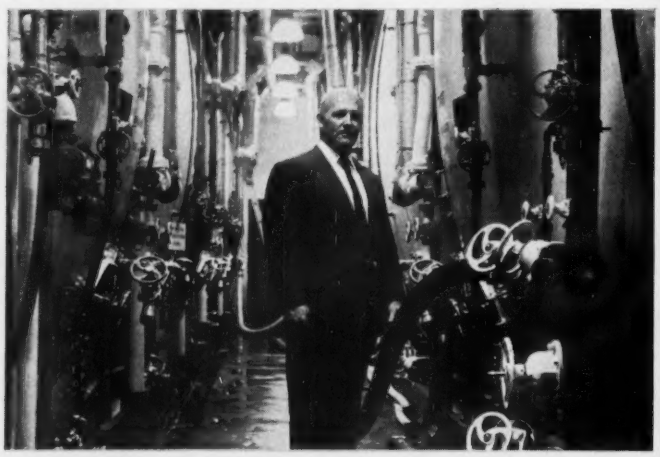
CIRCLE 95 ON READER SERVICE CARD 95

# Mr. Hackstaff, you've

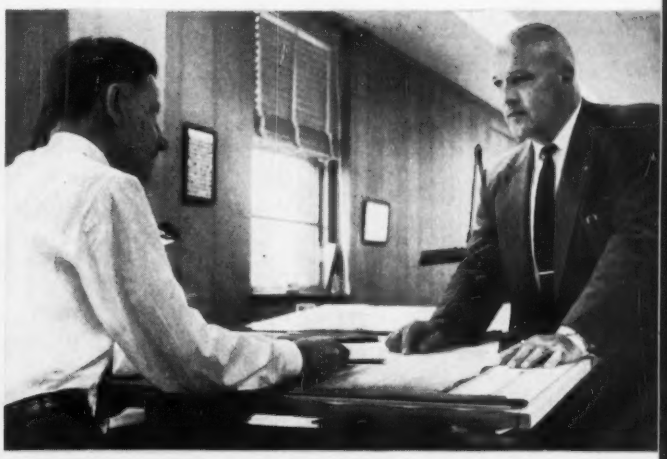


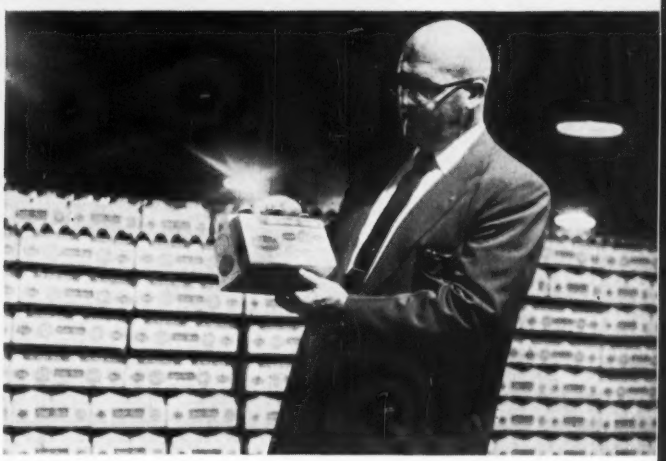
Spend tomorrow with Bruce Hackstaff, over at The F. & M. Schaefer Brewing Co. in Brooklyn . . . and man, you'll really hustle. He's V-P, Director of Plant & Production, but that doesn't really tell you a thing. This will . . .

He runs five divisions: (1) *Production* – all brewing, canning and bottling. (2) *Engineering & Maintenance* – all new construction and maintenance for plants, sales offices and redistribution centers. (3) *Traffic* – all trucking operations. (4) *Industrial Engineering*–efficiency, methods, standard and costs. (5) *Packaging* – top man on Schaefer's important Packaging Committee, and an excellent example of how Mr. Hackstaff collaborates with other management men in getting things done.

Bruce Hackstaff and his associates are part of a growing command of "whole men" today running major food plants everywhere. They are the planners, the "do-ers", the buyers. They read the one, complete magazine matched to their special needs – FOOD Engineering. How well they read it – yes, your advertising, too – and what they do about it, is explained to your profit in a new booklet now on press. *Write for your advance copy.*

# had a busy day!





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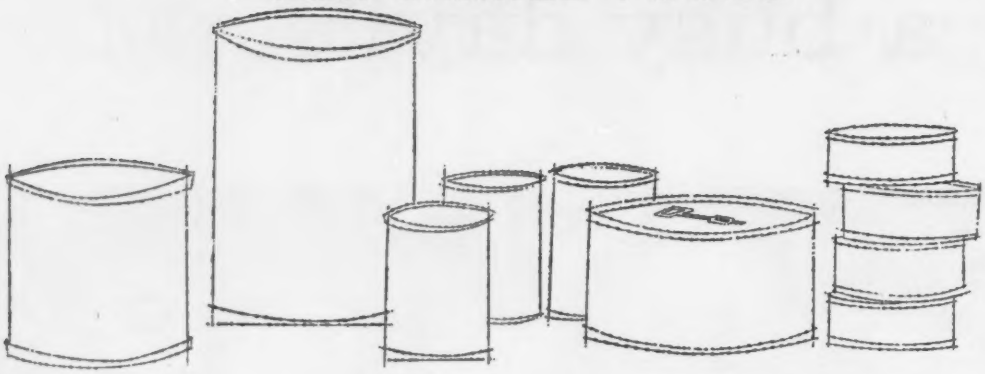
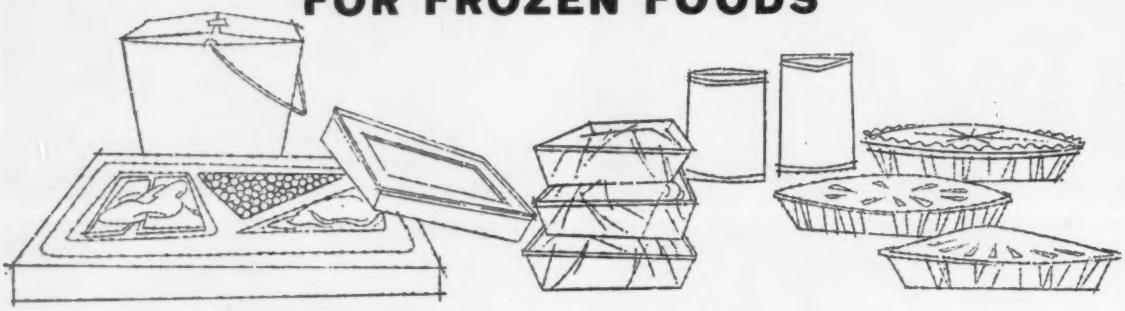
## FOR CANNED FOODS



## FOR FROZEN FOODS



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It's a more appetizing, natural taste. Easy-to-detect. And easily obtained with COL-FLO, a hard-to-believe, short textured starch from National.

COL-FLO preserves the natural flavor of thickened or stabilized foods. Canned or frozen. It never imparts an undertone of cereal taste. Never interferes with natural flavors. Too, it doesn't cloud natural colors between processing and eating. A crystal clear glossiness highlights your food product.

COL-FLO also safeguards and improves stability. Liquid separation tests show far greater resistance to breakdown than wheat flour or other waxy starches.

FREE TASTE TEST. We'd be glad to send a sample of COL-FLO for comparison. The test is simple. Just prepare identical solutions of COL-FLO and any thickener you're using in juice, water or any liquid. Then taste the difference! Sound interesting? Write, telling us something of the use you have in mind.

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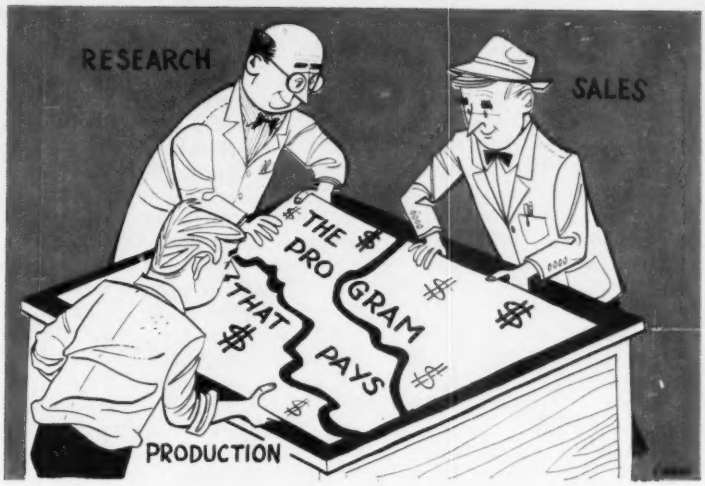




**"IT TAKES real teamwork to put it together." For today's problems are far too complex to hazard your competitive performance on one-man tactics or one-department strategies.**

# How to Plan Research for Profit

Part II: Managing the Team*

**Succes lies in screening ideas and problems—in order to pinpoint most promising projects, establish priority for each. Final step in astute research management is balancing program against available staff, with accent on cooperative action**

JUST WHAT are the steps by which a research manager manages research planning?

First, he must establish a group to do the job. And, of course, he must have ideas to consider, evaluate, and plan about. How-to-get-ideas is a separate subject, and much has been written about it. But let's assume you have the ideas. They need to be evaluated.

In General Foods, a planning committee consists of the division research manager as chairman. He has two or three technical people selected from his own staff and that of the Research Center.

This group meets with heads of the sales and production staffs for the purpose of discussing:

A. Business objectives for the next year.

B. The current research program.

C. New ideas turned in.

**It's very important that you get your sales and production people in at the very start. You may think you know what the company needs to do to progress—and maybe you really do know. But it's a sure thing you won't get far on your own.**

Moreover, a lot of research effort has been wasted in the past because the plans were not in line with the company's business objectives.

Usually, these planning meetings turn up a tremendous number of things that ought to be done.

**Of course, just what and how much can be done depends on the staff you've mustered. If it's a small staff, it's even more essential to do a thorough evaluating job on each proposal, so that available research effort will be applied to the most promising problems rather than be wasted on a lot of Class B ones.**

The planning group must define problems confronting the business and business objectives for the coming year, including needs for new products or improvements. Out of this usually emerges one or more specific problems.

It is essential to answer a lot of questions about each problem in order to determine which project has the best profit possibility.

**By "profit" I don't mean merely new dollar business. Protection of an established product is certainly as essential as any new business. And protection of the consumer, in the long run, may be most important to the company.**

## Establishing Priorities

For guidance of research planning groups, we developed a series of checklists containing items to consider in establishing the relative priority of each project. Such lists are mainly useful as reminders to guide your thinking, to assure that you haven't overlooked some essential.

You will never quite satisfy all the questions raised. You'll want to take certain business risks. And you'll permit some shortcuts based on your best judgment.

You'll make such moves deliberately—but only after considering all the factors, not because you overlooked them. That's the value of the checklist.

Of the several checklists devel-

*For Part I: Objectives and Costs, see FE Oct., p. 39.

**AKSEL G. OLSEN**

Formerly Technical Director, Research Planning, General Foods Research Center, Tarrytown, N. Y., and Past National President, Institute of Food Technologists

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**"Thorough evaluating is essential in program management."**

oped at GF, the first is titled "Items to Consider Before Authorizing a Research Project". Here they are:

1. Specifically, what are the objectives?
2. What are the reasons for doing this at all?
3. What is the approximate dollar value of these objectives?
4. Are there any reasons why the result might not be used–such as consistency with company policy, undesirable or unfeasible merchandising demands, or too costly installations? Are there patent or other legal reasons for not employing the results?
5. Who is primarily responsible for final decision on this? Is he and everyone concerned informed and in agreement?
6. What is the nature of the research required? What kind of specialists are needed to do the job right? And what type of R & D is required? Is a pilot plant needed? Is the raw material available, or will you have to produce it yourself?
7. Where can the work be done most effectively–in your own lab, at one of your plants, in some field location, or by an outside consulting laboratory?
8. What do you know about the literature, and related patents? Have surveys been made to give you the full picture?
9. Have you checked the records to see whether the same idea has been considered before, and if so what disposition was made of it at that time? Some ideas recur over and over.
10. What are the chances of coming up with a positive answer?
11. What will this project cost, both initially and ultimately, in order to get the results? Is this reasonable in view of the answer to Item 3 above?

This cost check is a sticker requiring a lot more than just a good guess.

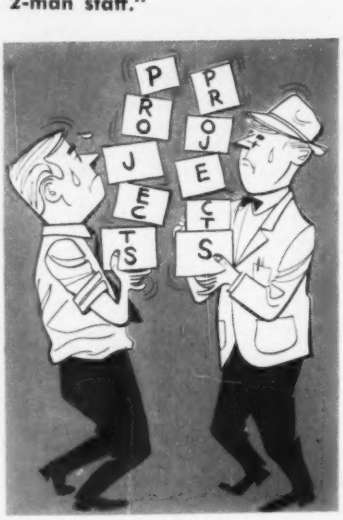
**The realistic estimation of cost of a research project requires all the experienced judgment you can muster, but it is still only an educated guess!**

If everything can be completely detailed and costed, it is probably an engineering job rather than research. We developed a checklist, titled "Estimating the Cost of a Project", which spotlights half a hundred points to be considered. Here are some of the major ones:

1. What is the most appropriate research team (number and type of men) to conduct the work?
2. What additional services are needed? Who can supply these?
3. What is the availability and cost of the raw materials needed? Can some raw material be charged off against production?
4. What special equipment is needed, and how will it be charged?
5. What travel expense is anticipated?
6. Has necessary time been allowed for writing reports, quality control procedures, and operating manuals?
7. Are there special time factors that must be met?

When answers to these points are available, the planning group can assign priority ratings to projects. It may even be possible to completely eliminate some of the proposals as unrealistic in view of current business situations, or cost of research vs. expected returns, etc.

**"Nothing is more frustrating than a 10-man program for a 2-man staff."**




Last step in managing the project is to balance the program against available research time. Here you must be completely realistic–this is no place for wishful thinking.

**Nothing is more frustrating than a 10-man program for a 2-man staff. It gets you no place. It's like trying to live beyond your means.**

Tailor or cut your program to fit your staff–and if that cuts out essential items, accept it as a fact of life, or get an authorization to increase the staff.

Don't list a lot of projects you know you can't do, just because they look good on paper. That is frustrating to management, as well as to the research staff.

## A Research Philosophy

Modern research effort–as practiced in all commercial laboratories that I am acquainted with–is based on teamwork, not on the individual. Problems today are far too complex for any one researcher to make the fast progress that is essential in order for his company to stay in the race with competing commercial concerns. Therefore, important problems are assigned to teams or group, rather than individuals.

It is more than ever true what the Red Queen said to Alice (in Wonderland): "Here, you see, it takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that."

Yes, it takes some real teamwork to get there fast. Teamwork, of course, is based on active cooperation between members of the team, and between each member and the leader.

That seems obvious. But still it doesn't always work that way, human nature being what it is. Not all food technologists, chemists, or chemical engineers, not all members of any laboratory staff, find it easy to submerge their pride in individual accomplishment and join wholeheartedly in a cooperative team effort.

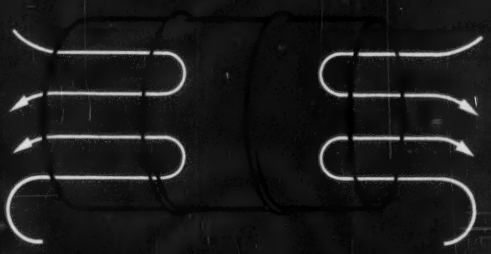
However, if they can't achieve that, and take pride in the team accomplishment, they don't belong in a modern commercial research laboratory, and they are not apt to last long.

After all, you can accomplish very little by yourself. Advancement necessarily is based on the success of the cooperative effort, the accomplishment of the group. —*End*

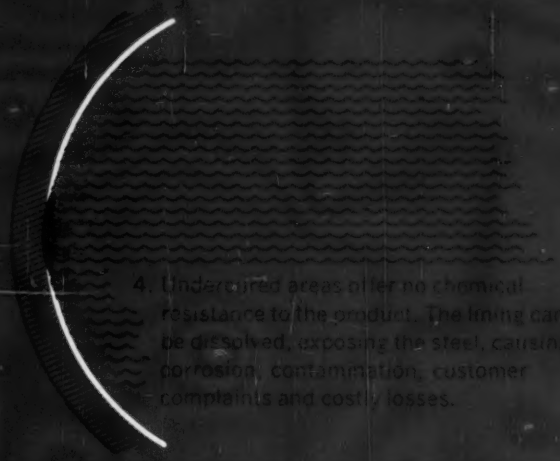


CIRCLE 101 ON READER SERVICE CARD→

2. may be improperly cured. This condition cannot be detected by eye or by touch before filling.



3. In ordinary or horizontal baking systems, the hot air of the ovens may not reach all parts of the lining uniformly.



4. Undercured areas offer no chemical resistance to the product. The lining can be dissolved, exposing the steel, causing corrosion, contamination, customer complaints and costly losses.

5. Rheem Vertical Curing sends drums through ovens upright. They act as natural chimneys, drawing the controlled temperature air uniformly over every square inch of lining. The result:

# NO UNDERCURED AREAS

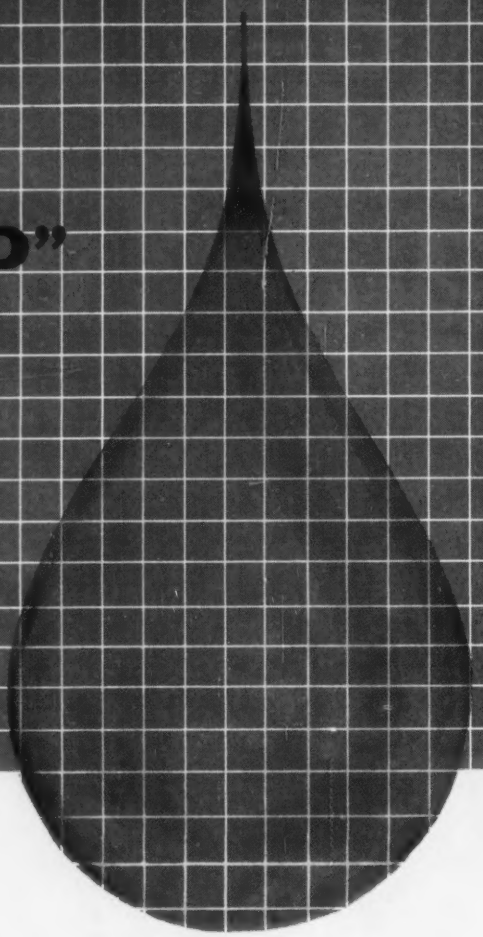
in lined drums baked by

# RHEEM VERTICAL CURING

And that's not all. For more than three years, Rheem Centrifugal Spray has been delivering lined drums free of pinholes, blisters, thin spots and globs or skips. Air turbulence is eliminated. Human error is eliminated. Lining thickness is controlled to within 1/10 of a mil. For more information, or help in developing a lining for a problem product, write the world's largest manufacturer of steel shipping containers at 1701 West Edgar Road, Linden, New Jersey. Plants across the country . . . Chicago, Houston, Linden, New Orleans, Richmond, Calif.; South Gate, Calif.; Tacoma. For other sales offices see the Yellow Pages.

Rheem

# Here's what Flo-Sweet "R & D" means to you



## New products through research are helping many companies set new sales records

Refined Syrups maintains a comprehensive research and development laboratory. This means Flo-Sweet is constantly improved, processes are kept up-to-date, and the significance and utility of new sugars are continually under study.

Flo-Sweet's liquid sugar system was the earliest form of bulk handling, preceding by many years today's trend to advanced materials handling of oils, flour, granulated sugars, fats, etc. Specialized knowledge gained through this pioneering makes it possible for Flo-Sweet to offer:

COMPLETE ENGINEERING SERVICE – Design and installation of customer receiving, storage, and distribution systems with built-in controls of meters, pumps, and valves for push-button operation.

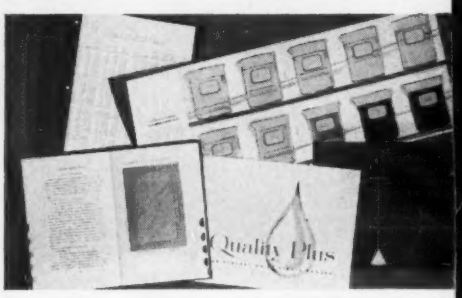
AUTOMATION – Coolers for bakers . . . heaters for fast and economical water removal . . . and specialized equipment designed by Flo-Sweet make possible continuous processing.

QUALITY IMPROVEMENTS – Removal of turbidity assures a truly neutral sweetener that safeguards flavor, aroma, and taste. Reduction of mineral content (ash) to .005% maximum and production of colorless liquid sugar, measures of sugar purity, are achievements of research.

NEW SWEETENERS – Flo-Sweet customers are enjoying the advantages of Sucrodex (sucrose-dextrose sugars), Inverdex (invert-dextrose sugars), and liquid sugar/corn syrup blends – a whole new family of sweeteners formulated to meet individual requirements.

In R&D, as well as in every phase of the company's service to industrial sugar users, Flo-Sweet resolves:

- **To help solve customers' problems.**
- **To offer products priced competitively and beyond reproach in quality.**
- **To earn the right to the continued confidence of sugar users, by keeping creatively alert to new developments.**




Flo-Sweet research has helped customers solve many problems. Factual reports, technical papers, illustrated brochures, and an authoritative handbook have been published to disseminate technical information widely.

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SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
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FLO-SWEET®

### Oxidative Changes in Fats Detected With Thiocyanate

Estimating oxidative changes in cocoa butter and other edible fats that result in peroxide formation is best accomplished by the ferric thiocyanate test.

This procedure correlates well with organoleptic evaluations, and is highly sensitive, so that small and rapid changes may be readily detected. It depends on the fact that oxidized fats dissolved in benzene-methanol solution and acidified with HCl, will oxidize ferrous chloride to ferric chloride. Latter is allowed to react with ammonium thiocyanate to produce blood-red ferric thiocyanate, amount of which can be measured with a colorimeter. Fat solution must be protected from light during the preparation and measurements.

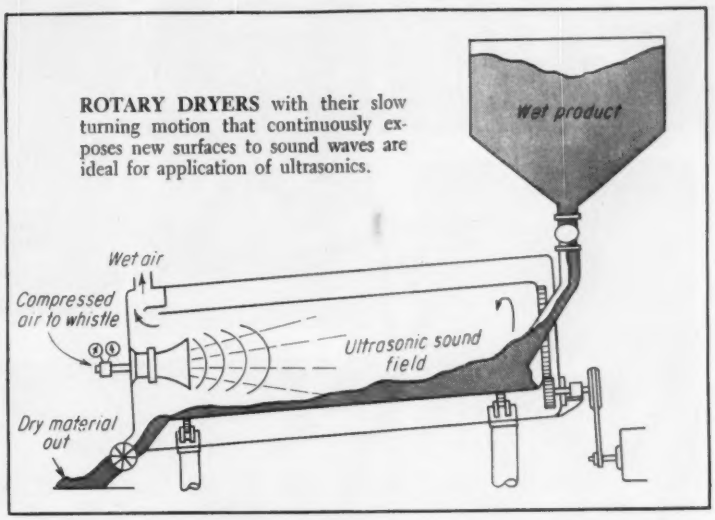
Studies of this method showed that high temperatures and light have more effect on aging of fats than air, which may affect them very little. Full cream milk powders show better shelf life if the fat content is high. Normally wrapped and sealed bars of milk chocolate stored at 65-70 F. gave oxidation values that tended to decrease with age, probably due to presence of vanillin and other oxygen acceptors. Organoleptically, the hermetically wrapped bars were superior.—*Int. Choc. Rev.* 14(1), 9-11; 14(2), 69-77; 14(3), 114-21; 14(4), 164-72, 1959.

### Shelf Life of Garlic Powder Longest at 6% Moisture

That nothing is gained by dehydrating garlic powder to below 6% moisture was indicated by equilibrium relative humidity determinations performed by both the Wink's weight equilibrium method and the graphical interpolation procedure of Landrock and Proctor.

Results indicate that critical point is about 10.6% moisture. Danger point is 9.5% moisture and 35% relative humidity. At 5.84% moisture the powder is free-flowing; at 6.94% it caked slightly.

At moisture contents of about 6% the powder can be stored well at 98.6 F. and does not cake or deteriorate in quality.—*J. Science Food & Agr.* 10(7), 359-61, 1959.




**ROTARY DRYERS** with their slow turning motion that continuously exposes new surfaces to sound waves are ideal for application of ultrasonics.

## Ultrasonics Seen As Valuable Aid In Drying Heat-Sensitive Foods

Conventional heating to take out the easily removed moisture, followed by ultrasonics to remove the remainder is seen as an improved method of drying heat-sensitive foods or ones that have long drying cycles.

Best suited for these operations are static sirens (air-jet whistles). They are capable of producing intense, powerful acoustic emissions of over 1 kw., have no internal moving parts, are relatively inexpensive, and provide required flow turbulence. Efficiency is about 20%.

However, these waves do not provide sufficient turbulence to carry moisture away rapidly. For this reason a partial vacuum or strong draft of air are necessary for satisfactory results. Extent of interface submitted to the waves is another factor governing rate of evaporation. Therefore, rotary or spray dryers give best results.

In the former, the slow turning motion provides a continuous renewal of product interface exposed to the sound. Spray dryers appear to be ideal for ultrasonic when emissions of 10-15 kc./sec. are employed. The finely atomized wet globules can be held in suspension longer by an acoustic field. And when the particles are vibrated by the sound waves their surfaces are exposed to more drying air.

Another factor is effect of the waves on agglomeration. With a large oscillation amplitude, the smaller globules agglomerate, and with a small amplitude the larger ones agglomerate. This leads to higher recovery rates and a change in size distribution of products at bottom of dryer. — *Chem. Eng.*, Sept. 21, 1959.

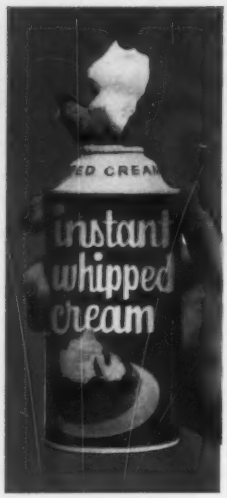
### Infrared Blanching Ups FF Quality

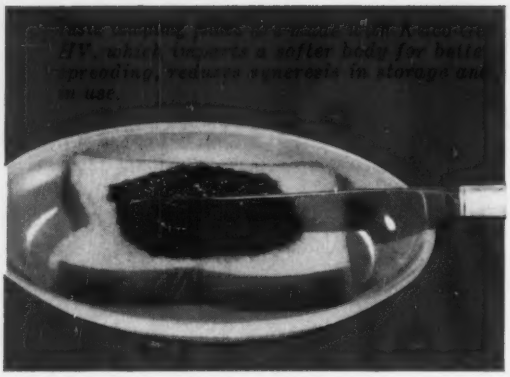
Flavor and texture of frozen celery and apples is greatly improved though infrared blanching prior to freezing. However, a preliminary treatment (15-sec. boiling water dip, or 30-sec. steam for celery, 15-sec. in bisulfite solution for apples) is required for best results.

In initial experiments three types of units were tested: (1) Calrods, comprising a nichrome coil surrounded by magnesium oxide insulation sealed-in stainless tube, operated at 1,200-1,800F.; (2) nichome wire surrounded with air in unsealed fused-quartz tube operating at 1,400-1,800 F.; (3) tungsten filament suspended in fused-quartz tube sealed in inert gas, operated at 4,000 F.

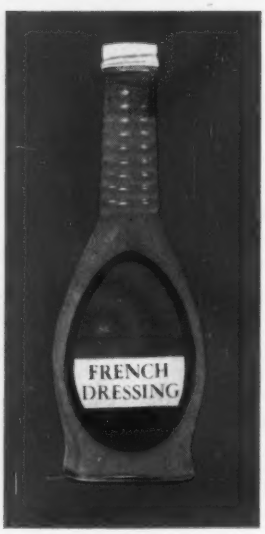
Blanching tunnels comprised two

**In pressurized foods,** *algin colloids effectively stabilize aerosol-dispensed whipped toppings, syrups, flavors and sauces, and provide superior flavor release, controlled viscosity, and improved stability for longer shelf life.*



**In French and salad dressing, meat and barbecue sauces,** *Kelcoloid produces uniform and stable emulsions of superior flavor release, improved consistency, smoother texture and longer shelf life.*




# Products improved— new products created with these unique Kelco Algin Colloids

**Kelco-Gel HV®**
**Kelco-Gel LV®**
**Keltone®**
**Kelcoloid®**

PRODUCTS OF
**Kelco Company**

Less than a teaspoon of Kelco algin per pound of food product produces high volume whip, easier mixing, more tender texture, and retarded weeping (syneresis). Foods look better, taste better, stay fresh longer.

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530 West Sixth Street, Los Angeles 14, Calif.
Cable Address: Kelcoalgin—New York

6-ft. radiant panels equipped with aluminum reflectors, and adjustable stainless wire belts for the sliced products. Heating units were mounted on the panels. Sides were open for observation.

Following blanching, samples of infrared- and conventionally-blanched products were frozen and stored at 0F. for 3 months. When thawed, the infrared samples were found superior in flavor, texture and appearance to conventionally blanched products. Bacterial counts were reduced 99½%, and coliform organisms were negative.

Following these tests, approximately 1,000,000 lb. of celery were prepared employing a 30-sec. steam treatment, then passing product under a 24-ft. bank of calrod units placed 7 in. above conveyor belt.—*Food Processing, Packaging, Marketing* (Pub. in London), 343-48, Sept. 1959.

### Storage Cuts Bacteria In Frozen Meat Pies

Bacterial counts in 188 frozen meat pies (chicken, turkey, beef, and tuna) purchased at retail outlets, ranged from 40-12,000,000/g. fourteen had counts over 100,000, 83% under 50,000, 75% under 25,000.

A total of 307 isolates were made. All could be classified as enterococci by Sherman's description. Each isolate was identified. *S. faecalis* was found in 151, *S. faecalis* var. *liquefaciens* in 102, and *S. faecium* in 54.

When sterile chicken gravy samples were inoculated with equal numbers of *E. coli*, *A. aerogenes*, *S. faecalis*, and *S. faecalis* var. *liquefaciens* and stored at −6 F., coliforms decreased from 5,600,000 to 66/ml. in 481 days, while the enterococci decreased from $15x10^6$ to $5x10^6$. *A. aerogenes* and *S. faecalis* var. *liquefaciens* were more resistant to the low temperature storage.—*Applied Microbiology* 7(5), 320-28, Sept. 1959.

### Off-Flavors and Odors In Irradiated Meats

Chicken meat irradiated under anaerobic conditions develops an irradiation odor, due to formation of a mixture of complex sulfur- and carbonyl-containing volatile compounds.

Odor becomes noticeable at a dosage of 50,000 rads, and by 250,-


NON-UNIFORM FOOD PRODUCTS

**NO PROBLEM**

*for the new* **HAYSSEN RT**

***The World's Most Flexible Automatic Packaging Machine***

**The Hayssen RT brings the economies and conveniences of automatic packaging to the candy industry where other machine methods have failed. A new method of independently forming the package around the product allows the RT to package uniform and non-uniform products with equal success. Candy sticks, molded chocolate, licorice sticks, even dipped candies can be wrapped rapidly without the use of u-boards or other support. For better, more economical packaging of your product, see the Hayssen RT.**

***The RT brings new flexibility to packaging. Height, width and length changes are made quickly and easily without the use of change parts. Any heat sealing material can be used, including unsupported polyethylene. For complete details, write Hayssen today.***

**Range:**
Min. Width — 1"
Min. Length — 5"
Max. Width — 12"
Max. Length — 12"

**Size changes made without use of change parts.**

**Sealing Head Types:**
Impulse sealing for polyethylene and other plastic films; resistance types for coated or laminated material.

**Speed:**
Variable. 20 to 150 packages per minute depending on package length and material used.

**Feed Types:**
Magazine, flight infeed conveyor or hand feeds available.

*Specifications subject to change without notice.*

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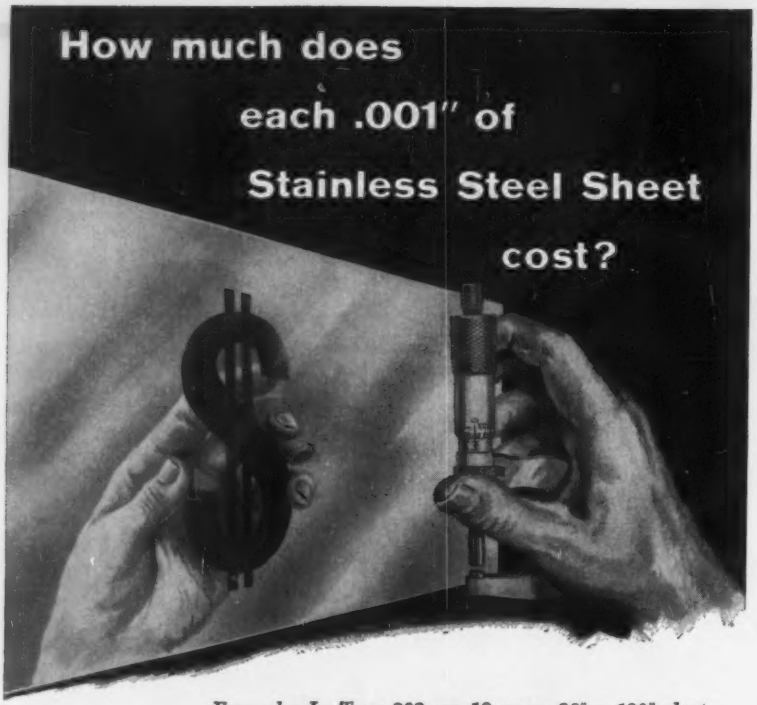
CIRCLE 105 ON READER SERVICE CARD 105




*Example: In Type 302, an 18 gauge 36" x 120" sheet has a base price of 52¢ per pound. In sheets of this size, each .001" of thickness weighs 1.26 pounds per sheet. Thus, each .001" of unnecessary thickness costs you at least 65.5¢ more per sheet.*

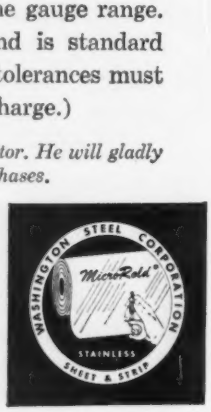
On the surface this may seem insignificant, but it has a marked effect on the total price you pay for a given quantity of stainless steel sheet. With cost a factor, this can be important since stainless steel is purchased by weight.

Using the above example, a mere .001" of unnecessary thickness costs you $20.76 more per ton. If you figure the maximum allowable gauge thickness variation of plus or minus (10%), you can readily see that the price you pay for overall sheet thickness could involve much needless cost.

Washington Steel has the equipment and the experience to produce MICROROLD stainless steel to tolerances much closer than standard industry tolerances. Usually money can be saved by first selecting the minimum gauge that will serve the requirements of the application, and then specifying that the thickness be rolled to the light side of the gauge range. This specification involves no cost extra and is standard practice at Washington Steel. (If exact close tolerances must be guaranteed, there is a nominal additional charge.)

*Consult your nearest MicroRold Stainless Steel Distributor. He will gladly show you how to save money on your stainless steel purchases.*

**Washington Steel Corporation**
12-W Woodland & Griffith Avenues
Washington, Pa.




106 CIRCLE 106 ON READER SERVICE CARD




000 the flavor is detectable. The smaller dose has no effect on storage life; the larger one extends shelf life from 7-8 days to about 25 days. Production of sterility requires about 5,000,000 rads and renders samples of chicken meat unacceptable.

Color of meat was affected by irradiation in air, brown and green shades appearing, probably as a result of oxidation breakdown of myoglobin.—*J. Science Food & Agr.*, 10(5), 286-95, 1959.

### Activity of Lipase in Flours Influences Taste of Foods

Soapy tastes in crackers and cookies can be due to activity of lipases in the flours used.

Oat flours are known to have sufficient lipase to liberate lauric acid in oat cakes. Flour made from sound wheat is low in lipase, but that harvested in wet weather may have mold contamination that can result in high lipase activity. If this flour is used in doughs containing palm kernel or coconut oil, free fatty acids especially lauric acid will be released and baked goods will have a soapy taste.

Amount of fat splitting in a dough depends on lipase activity of flour, dough temperatures and time it is kept before baking. Since these conditions vary from plant to plant no fixed upper limit for fat acidity and mold count will apply in all cases.—*J. Science Food & Agr.* 10(7), 401-3, 1959.

### Sugar In Spice Brine Improves Dill Pickles

Flavor, texture, color, and overall acceptability of dill pickles packed in glass are greatly improved by addition of 2% sucrose to the spiced brine in which they are packed.

This was demonstrated by studies in which pickles were packed cold in brines containing 0, 2, and 4% sucrose, pasteurized at 160F. for 45 min., cooled to 95F., allowed to equilibrate for 4 weeks, then stored at 4 temperatures —34, 70, 86, and 98F.—for up to 32 weeks. Samples were removed for testing after 4, 8, 16 and 32 weeks.

Pickles containing 2% sucrose, stored at 70F., scored highest on all counts, with the 86F. ones a close second. Those stored at 34 and 98, although not as desirable, were improved by addition of 2% sucrose. —*Food Tech.*, 489-92, Sept. 1959.

# KEEP YOUR PRODUCT *in* SIGHT
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WILPAK®

THE MODERN PLASTIC CONTAINER THAT PUTS S-E-L-L into your PRODUCT

## NOW AVAILABLE

WILPAKS®—the quality line of plastic "see-thru" containers are now available in either MEDIUM WALL (for economy) or HEAVY WALL (for strength and serviceability) . . . in the three most popular 8 oz., 12 oz. and 16 oz. sizes. All are guaranteed usual WILPAK® quality.

## NEW PRODUCTION FACILITIES

Our increased production facilities permit us to add several new accounts who demand precision and engineered quality.

## NEW LOW PRICES

Send for new price lists featuring new prices on the 1960 WILPAK® engineered quality line of plastic containers.

## LARGE RANGE OF CONTAINER SIZES

WILPAKS® come in 6 oz., 8 oz., 9 oz., 10 oz., 12 oz., 14 oz., 15 oz., 16 oz., 17 oz. and 32 oz., all round in crystal clear or natural. Also large variety of lids in rigid styrene or flexible polyethylene for machine or hand capping. Crystal clear, natural or colored—vented or non-vented. All lids fit all containers.

WILPET TOOL & MANUFACTURING CO.
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# The Answer to Your Wash-Up Problems!

OPEN WALL-TYPE
Hot and Cold Water
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RECESSED WALL TYPE
For concealed piping on new installations. This unit is removable and the entire assembly is covered by an attractive stainless steel plate.

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**HOSE STATIONS and MIXING UNITS**

- Pedestal Floor Type
- Temperature Indicating
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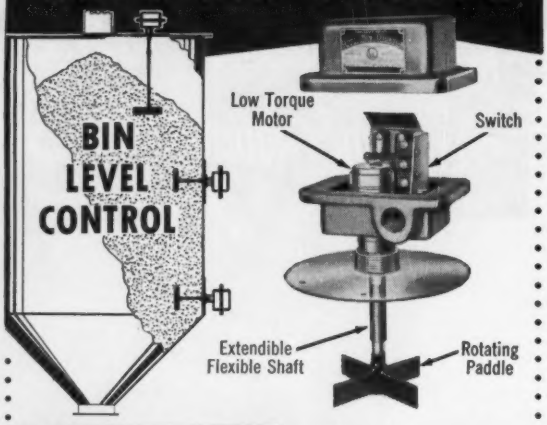


**HIGH IN PERFORMANCE** -All Models Heavy Duty
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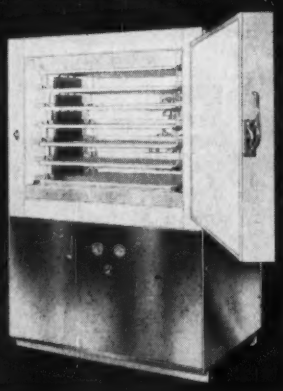
## NEW! COMPACT, SELF-CONTAINED DOUBLE CONTACT FOOD FREEZER!

**DOLE**
*Freze-Cel*
MODEL 2735-6

THE ANSWER FOR THE SMALLER OPERATION



6-Station unit: 240—5" x 4¼" packages per freeze . . . all refrigeration and hydraulic equipment self-contained . . . uses R22 refrigerant . . . only 17 sq. ft. of floor space required . . . patented DOLE "Thermo-Film" feature increases freezing speed up to 10% . . . installation requires only electrical, water and drain connections.

**DOLE REFRIGERATING COMPANY**
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CIRCLE 108 ON READER SERVICE CARD

# MEN & COMPANIES

**PMMI Chief . . .** Recently-elected Packaging Machinery Manufacturers Institute President Kenneth B. Hollidge views the success of organization's recent show in New York as evidence of an "upward trend in packaging machinery business through the period of mass merchandising lying ahead."

Optimism results from 20,000-visitor turnout at show, where 155 companies exhibited over $2 million worth of latest machinery for efficient and functional packaging (p. 56-59).

**Kenneth B. Hollidge**

## Personnel

**G. D. Bartrem,** Director of Sales for Minute Maid's Citrus Products Div., moves in as v.-p. with MM International, pointing up expansion of overseas markets for citrus.

**William D. Enzie** and **Theodore J. Holmgren** have been named Packaging Director's in General Foods' material services and design services, respectively.

**Edward R. Kienle** is new market research mgr. at Ward Baking Co.

**Harry R. Mathis,** new v.-p. at Libby, McNeill & Libby, heads up frozen foods division.

**Julia R. Mayer** and **Mrs. Stella Russell** are first women to serve on board at Hunt Foods & Industries.

**John C. Mommsen,** sales chief at Armour Foods, moves up to v.-p. post.

**Charles G. Mortimer,** chairman of General Foods Corp., is new president of Nutrition Foundation. New v.-p. is **Daniel F. Gerber,** Gerber Products president.

## Associated Industries

**International Flavors & Fragrances Inc.,** has consolidated its **van American-Haebler** and **Polak & Schwarz** domestic flavor units, with headquarters in Elizabeth, N. J. Henri van Mameren is new Flavor Div. general manager. Dr. James H. McGlumphy, technical director, heads up research, manufacturing, and product control.

**Miles Chemical Co.** has dedicated a $3.6 million citric acid plant in Elkhart, Ind.

**Howard C. Parmelee Dies**

The first Editor of *Food Industries* (now FE), Howard C. Parmelee, 84, died last month. He had served as editor of various McGraw-Hill publications for 36 yr. prior to his retirement in 1946.

Mr. Parmelee played a major role in the shaping of enlightened editorial policies and practices for *Food Industries,* which made the publication an important influence in its field.

He was a former president of the Colorado School of Mines and the American Electrochemical Society, as well as editor of *Engineering & Mining Journal* and *Chemical & Metallurgical Engineering* (now *Chemical Engineering*).

During his retirement, Dr. Parmelee had contributed regularly to FE's Advances in Food Technology department.


Speed processing the

# natural way

with

# TAKAMINE ENZYMES

There is hardly a food product that cannot be improved by enzymes, or a process that can't be aided by these desirable catalytic agents. Takamine enzymes have been especially effective in the production of chocolate syrups, wines, ciders, beer, meat tenderizers, cereal products and animal feeds. These willing workers offer these basic advantages:

**• Are of natural origin. • Highly specific in their actions. • Work best at mild temperature and near-neutral pH. • Act rapidly at relatively low concentrations. • Readily inactivated when action is complete.**

Takamine research is constantly developing new materials and methods for the food processing industry. We may be able to help solve your particular processing problem. Please write us for complete information.

**It will TASTE better, LOOK better, SELL better with Takamine Enzymes!**

TAKAMINE® Miles Chemical Company

(pronounce it Tack-a-ME-nee)

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9TAK-20




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# GET 300%* MORE USEABLE PRODUCT PER HOUR

Full 360° screen is an exclusive Stokes feature. Shown are two of the many screen sizes available.

**in granulating**
**pulverizing**
**mixing**
**shredding**
**pulping**
**chopping**
**dispersing**
**recovering...**
**a wide range of wet and dry food materials**

## with the STOKES TORNADO MILL

More and more food processors are finding Stokes Tornado Mill provides outstanding performance and versatility. Its exclusive 360° screen assures an average of 300% more useable material per hour... resists clogging even in processing wet and sticky materials. What's more, no special treatment is required for heat sensitive material. For thorough cleaning, the entire grinding chamber, including rotor and blades can be completely disassembled in a matter of minutes. All contact parts are fabricated from stainless steel to guard against contamination. With the Tornado, you can switch from one product or operation to another easily and quickly.

For complete details, including specific performance comparisons on typical materials, write today for Bulletin 350.

**Average, based on processing of dry granulation*

*Process Equipment Division*
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

**STOKES**



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# "Knox's quality product meets our rigid specifications," says production manager of major food packing firm

The production manager of one of the South's largest packers of peanut butter, jams, jellies, mayonnaise, coffee, and salad dressings,* recently reported on his firm's extremely large use of glass containers:

"Thermal shocks involving rapid temperature changes and production line speeds of more than 100 units a minute, innumerable sharp impacts of glass-on-glass and glass-on-metal, and top clarity to permit immediate product recognition—these are all factors that must be overcome by our glass container suppliers.

"We've been using Knox Glass jars and bottles continuously for almost 15 years. They have consistently met our requirements in dimensions, cleanliness, clarity, and delivery service. They deliver a quality product that meets our most rigid specifications.

"Prompt delivery—often overnight—with a minimum of rejects is also a must for our operation. We plan on operating with a minimum glass container inventory, so the glass suppliers we use have to really give us service. We get this kind of service from Knox."

Let your Knox representative show you how Knox can supply you with top-quality glass and top-quality service —consistently. Contact Knox Glass, Inc., Knox, Pa.

*Name available on request.

*the new* / **KNOX GLASS**

# Thomas J. Lipton, Inc., Needed Good Port, Rail And Trucking Facilities For Its New Plant

**$3,000,000 LIPTON PLANT,** on 14-acre tract, has 172,000 sq. ft. of floor space, employs 250 people. Air-conditioned, automated, it is most modern of its type in the world. Tea is untouched by human hands. Plant's yearly output would make three billion cups of tea.

**VIRGINIA'S STRATEGIC LOCATION** permits Lipton to distribute economically north and south along the entire Atlantic coast and through the midwest. Rail and trucking facilities at plant are excellent.

**ABUNDANT ELECTRIC POWER** was a factor in Lipton's choice of Virginia. Among other reasons were, "the favorable impression that the community made on company officials and the type of labor available."

## VIRGINIA suited Lipton to a T-ea!

When Thomas J. Lipton, Inc., decided to build a new processing plant, they spent months studying plant sites. Result: Virginia met their requirements to a T-ea!

At Suffolk, Virginia, Lipton imports 10,000,000 to 15,000,000 lbs. of tea annually through the giant port of Hampton Roads. With approximately 8,500 sailings a year, Hampton Roads has some 300 piers, docks and wharves . . . 10,000,000 square feet of warehouse and transit sheds . . . the most modern loading and unloading facilities for cargoes of every sort. In distributing throughout the eastern half of the nation, Lipton is aided by Virginia's fine network of railroads and 50,000 miles of primary and secondary highways.

Of the move to Virginia, Lipton stated publicly, "We like your wide-awake spirit and the way you encourage industry. Lipton is happy to be here."

If you're planning a new plant, let us tell you why so many companies are locating in Virginia. Phone, wire, write, or visit in complete confidence . . .

C. M. Nicholson, Jr., Commissioner
Division of Industrial Development
Virginia Dept. of Conservation and Economic Development
State Office Bldg., Richmond, Va.
Phone Milton 4-4111 Ext. 2255

***You, too, can find these... and many other great competitive advantages in*** **VIRGINIA**

Virginia's a wonderful place to play or work. Send for Free Vacation Guide Book.



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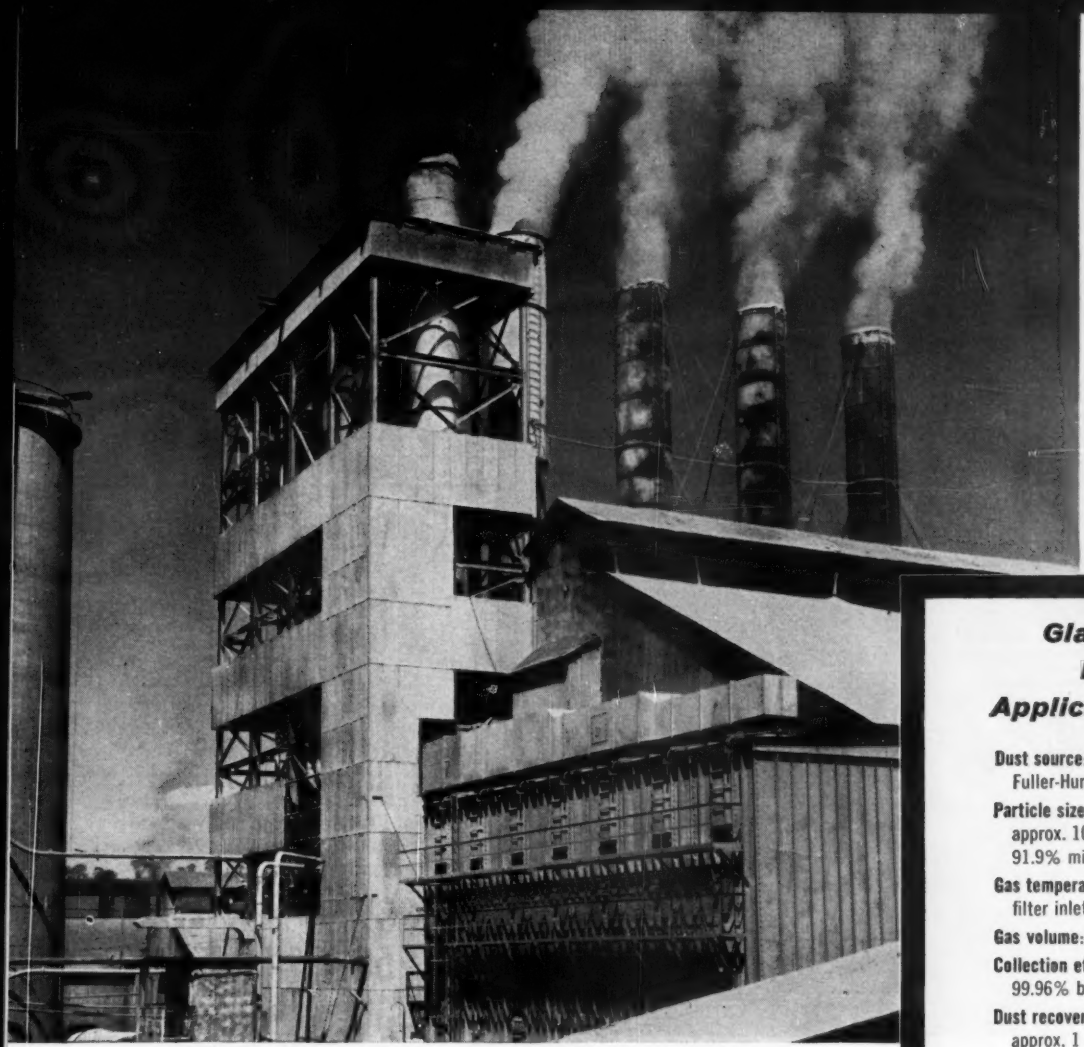


### *Glass-Bag Filter Application Data:*

**Dust source:** cement kiln with Fuller-Humbolt preheater

**Particle size:**
approx. 100% minus 10 microns
91.9% minus 5 microns

**Gas temperature:**
filter inlet: 570-600° F.

**Gas volume:** 42,000 cfm

**Collection efficiency:**
99.96% by weight

**Dust recovery rate:**
approx. 1 ton/hour

**Filter size:** 7 compartments, 48 fiber glass bags per compartment

**Bag cleaning method:**
SONOCLEAN

# Dracco Glass-Bag Filter stops air pollution

The unretouched photograph shows the kiln stacks at an eastern cement plant. *All five kilns are operating!* One stack is clean because a Dracco Glass-Bag Filter is removing all visible dust from the hot kiln exhaust gas.

Results like this have made Dracco Glass-Bag Filters industry's most effective weapon against air pollution.

### New performance standard

Previously the hot kiln gases would have made this an "impossible" job for a cloth bag collector. But fiber glass cloth filters, pioneered by Dracco, can collect hot, corrosive dust and fumes to 600° F. at virtually 100% efficiency.

This radically better dust collector is now available to solve the toughest air pollution problems: cement kilns, calciners, metallurgical furnaces, power boilers, chemical processes, cupolas, steam micronizers, carbon black production.

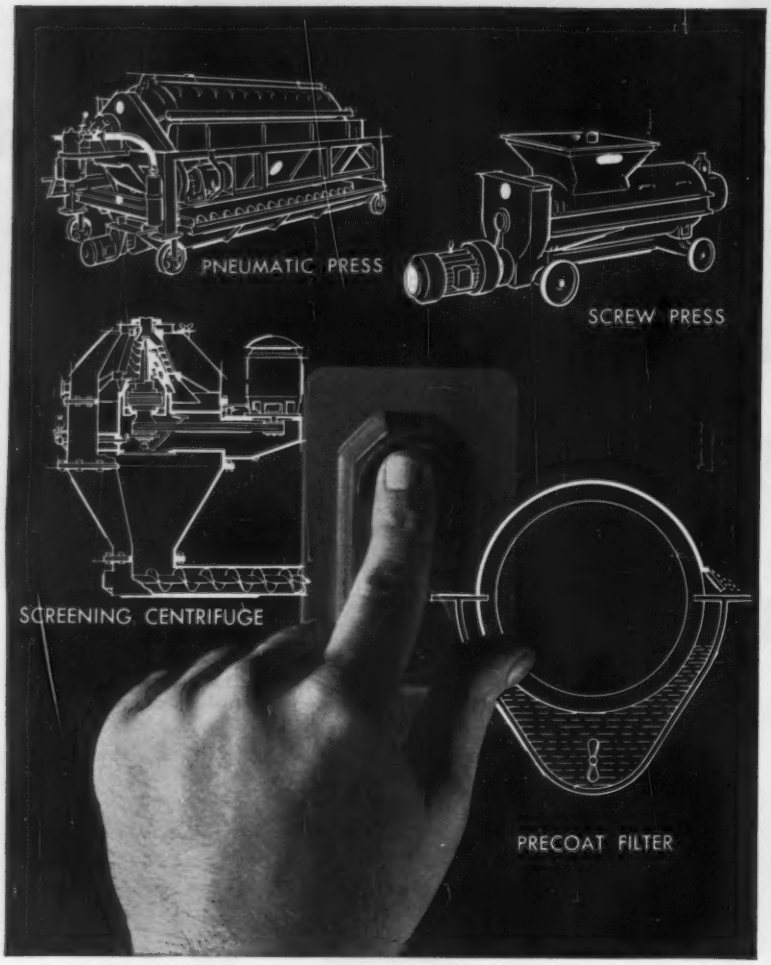
### Exclusive advanced design

Dracco Glass-Bag Filters are engineered systems of modular design which operate automatically and incorporate exclusive means of cleaning filter bags. The patented SONOCLEAN unit utilizes sonics to remove all dust without cloth wear or fracture. Alternately, for light flocculent dust, the patented SWING-CLEAN mechanism uses gentle motion to dislodge difficult dusts. Both SONOCLEAN and SWING-CLEAN assure long bag life which in some cases has exceeded two years.

For further information on Glass-Bag Filters, today's most advanced equipment for air pollution or hot dust problems, contact: Dracco Division of Fuller Co., Harvard Ave. and East 116th Street, Cleveland 5, Ohio.

**DRACCO** *airstream* conveyors
dust control equipment

FULLER COMPANY GENERAL




# PECTINOL®

## for automatic processing of fruit juices

PECTINOL brings the processing of fruit juices a giant step closer to continuous operation. How?—The batch hydraulic press is being replaced by more efficient equipment such as the Willmes press, Garolla press, or a combination of a screening centrifuge and a precoat filter . . . a move made practical by pectinolytic enzymes. PECTINOL enzymes break down the pectins in fruit and help to release juice from pulp cells; in the extracted juice they act on the colloidal pectic pulp particles for easier sedimentation and filtration. In the Garolla and Willmes presses, PECTINOL reduces the excessive slipperiness of Concord grapes and the gelatinous grape pulp. In using a precoat filter for clarifying apple juice extracted by a screening centrifuge, PECTINOL action on the high quantity of solid matter prevents clogging of the filtering surface, reduces the amount of filter aid used, and makes possible a practical and economical filtering rate.

*Get more information on how PECTINOL can improve your juice processing by writing to Dept. SP-25.*

*Chemicals for Industry*

**ROHM & HAAS COMPANY**

**WASHINGTON SQUARE, PHILADELPHIA 5, PA.**

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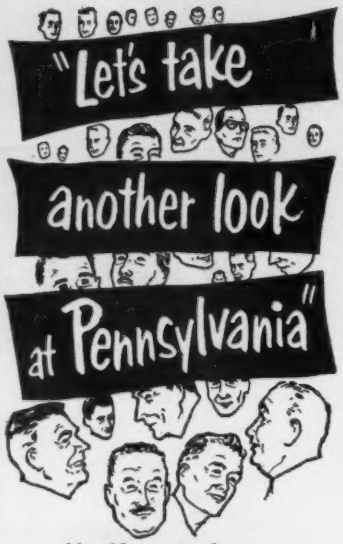


## . . . that's what a growing number of industrial executives are saying and doing!

For the three and a half years—'56, '57, '58, and '59 to date, they announced:

**307** NEW PLANTS

**258** RE-OPENINGS OF IDLE PLANTS

**666** PLANT EXPANSIONS

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**They are finding:**

Surplus of industry-minded workers . . . Strategic locations in the great Eastern market with access to major trunk line railroads, and modern highway and Turnpike networks . . . Ports on the Atlantic, St. Lawrence Seaway and Ohio River system . . . All types of industrial raw materials and components . . . 100% low-interest plant financing in labor surplus areas . . . Choice of industrial "parks" and individual plant sites.

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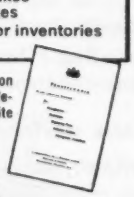
- Manufacturing exemption for capital stock and franchise taxes
- Low local property taxes
- No tax on machinery or inventories

For free copy of "Plant Location Services" pamphlet, or for details on 100% financing, write or call:



**Pennsylvania Department of Commerce**

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CIRCLE 228 ON READER SERVICE CARD

# FE SERVICE CENTER


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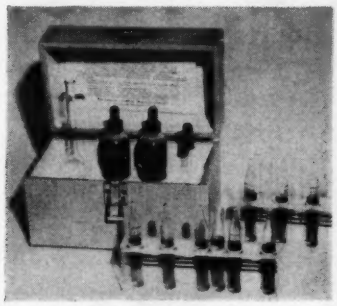
## NEW EQUIPMENT & SUPPLIES



### Speeds Quaternary Tests

Q.A.C.s—quaternary ammonia compounds used in food plant sanitation—are quickly checked for concentration using this compact kit.

Fast readings are enabled over a wide range (1 to 500 ppm.). Lower readings are made directly, while higher ones require a dilution step (made with equipment provided).

Color standards are mounted in a special Plexiglas viewing device that simplifies comparisons.—*LaMotte Chem. Products Co., Chestertown, Md.*

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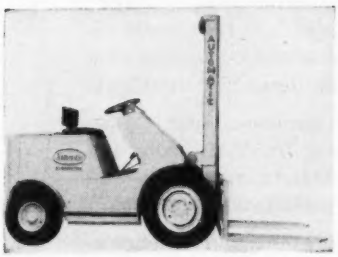

### Instant-Power Fork Lift

Road shock is termed eliminated with this pneumatic-tired, gas-powered, electric-driven fork-truck, which requires no direct mechanical coupling between engine and drive axle.

Unit is particularly suited to yard operations. Its gasoline engine transmits power through vari-voltage generator to matched DC series wound electric drive motor, producing instant power at acceleration and optimum torque output.

Other features: Speeds up to 9 mph., 360-deg. visibility, power steering, lower maintenance, and a reduced center of gravity for maximum stability.—*Automatic Transportation Co., 149 W. 87th St., Chicago.*

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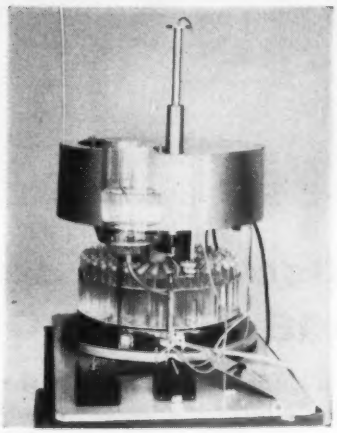

### For Fast Mass Sampling

Greatly simplifying tasks of mass sampling and analysis, this fully automatic device mechanically collects samples from a source column and transfers them to and from the testing instrument employed.

Up to 144 samples may be handled by the equipment, which has three removable racks, each holding 48 test tubes or containers. Polyethylene ball caps, which cover and protect the samples, are removed and replaced automatically.—*Applied Physics Corp., 2724 S. Peck Rd., Monrovia, Calif.*

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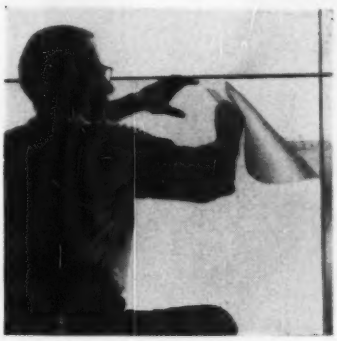

### Anti-Glare Window Vinyl

Window sizes up to 48x72 in. can be protected from fatigue-producing glare and excessive temperatures with this special vinyl sheeting.

New product, "Tox-Shade," is considered more economical than other coverings because of easy application, reduced maintenance and replacement, and quick-stripping for seasonal storage.

Sheeting is furnished custom cut in several transparent, translucent, and opaque-color forms.—*Toch Bros., 2600 Richmond Ter., Staten Island, N. Y.*

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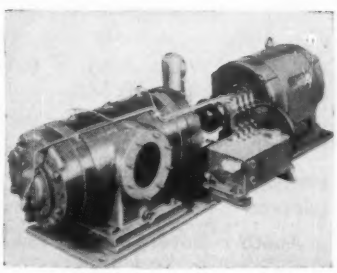
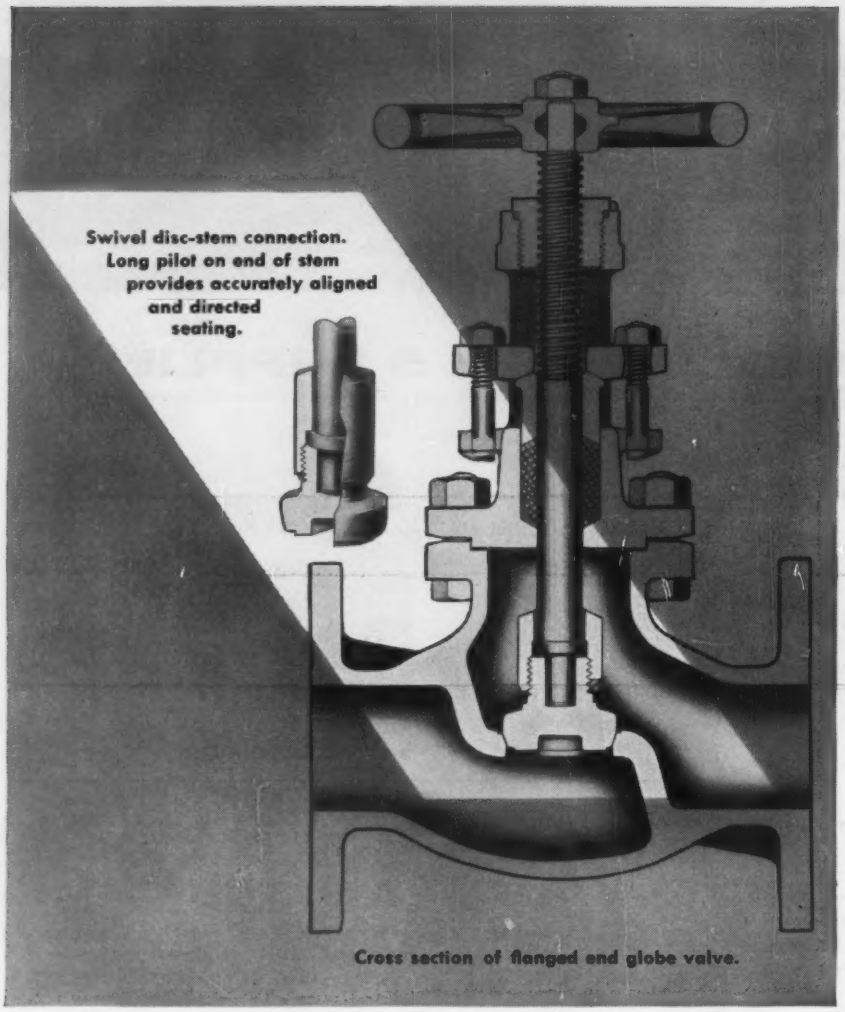
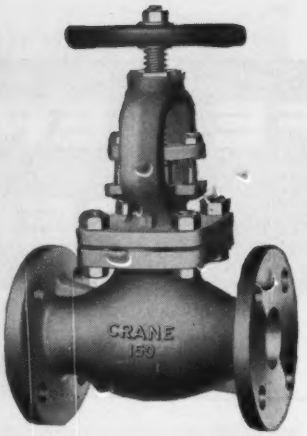


### Compact Low-Temp Booster

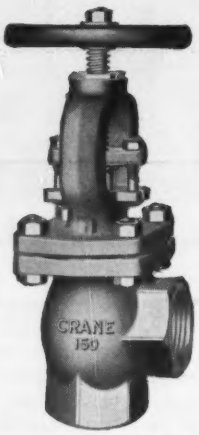
High efficiency, compactness, versatility of application, and ease of maintenance are featured in this ro-




Cross section of flanged end globe valve.




**No. 18811 globe, ½"-6", flanged ends; ½"-2", screwed ends.**




**No. 18812 angle. ½"-2", screwed ends; ½"- 6", flanged ends.**

# How this swivel disc saves seating surfaces in Crane 18-8 SMo Globes

Even on toughest corrosive fluids, you will find these valves seating tight long after others have leaked.

The seats last longer because the Crane free swivel disc-stem connection prevents seizing and galling on the seats. The disc stops turning on contact with body seat ring, and the stem takes over all the closing torque.

Minimum clearance in disc-stem assembly prevents vibration and chatter, and the long pilot end of stem guides the disc squarely to seat.

Another feature of this disc—its modified plug type design combines the easier seating of a narrow ball-to-flat seat, and the greater resistance to erosion and scoring of a wide plug type disc. It's the ideal design for throttling.

Improved seating is but one of many refinements that make Crane 18-8 SMo globe and angle valves today's outstanding value in original cost as well as in maintenance savings.

For complete specifications and recommendations on applications for these all-stainless steel valves, consult your local Crane Representative . . . or write to address below.

**CRANE® VALVES & FITTINGS**

**PIPE • PLUMBING • HEATING • AIR CONDITIONING**

**Since 1855—Crane Co., General Offices: Chicago 5, Illinois—Branches and Wholesalers Serving All Areas**

tary booster compressor designed for low-temperature conditioning.

With a 4-400 ton refrigeration capacity, depending on size and operating conditions, unit fits readily into multi-stage systems as first stage.

Absence of reciprocating parts allows smooth operation.—*Vilter Mfg. Co., 2223 S. First St., Milwaukee.*

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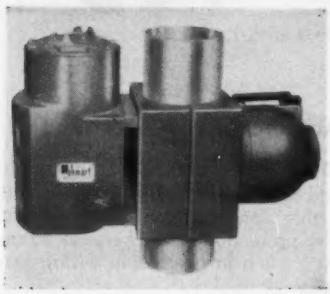

## Ray-Gages Piped Material

Specific gravity and percent solids of fluids or slurries in a line are measured automatically with this radiation-type density gage.

For use on pipes up to 8-in. dia., gage has radioactive material in a safety-shielded holder on one side of line, and a measuring cell on other side.

Detecting radiation energy in relation to density of material flowing, cell provides proportional electrical signal. This is amplified and fed to a recorder or controller for actuating pumps or valves.—*Ohmart Corp., 2236 Bogen St., Cincinnati.*

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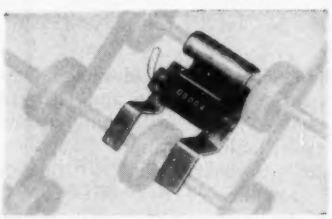

## Gravity-Conveyor Counter

Almost any gravity-wheel conveyor can be fitted with this mechanical counter for toting passing cases.

Activator is arm on counter shaft. Whenever a case rolls by, it depresses this arm, which records by turning shaft. Device counts to 99,999. Knurled knob makes for easy reset.—*Rapids-Standard Co., 342 Rapistan Bldg., Grand Rapids, Mich.*

Circle 350 on Reader Service Card

## Multi-Purpose Slicer

Interchangeable food chutes and adjustable fences permit random slicing of fruits, vegetables, and meats in newly-introduced unit.

Slicer has positive-angle feed trough that enables uniform cutting of foods up to 12-in. wide or 7½-in. dia.

Unit includes ¼-hp. motor, 11¾ in. stainless steel knife, slice control, aluminum feed grip, and tongs for holding odd-shaped pieces.—*Hobart Mfg. Co., Troy, N. Y.*

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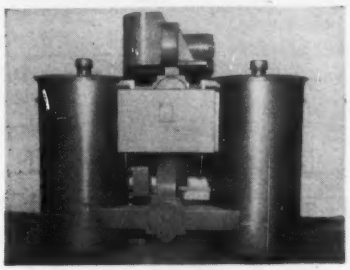

## "Packaged" Dehumidifier

Latest dehumidifier is this Model A75, a completely automatic "packaged" adsorption unit. It handles as much as 700 cu.ft. per min. and removes 300 lb. of water in 24 hr.

Maker cites equipment's high versatility in processing operations, as well as routine control in storage areas.

With minimum of moving parts, machine is designed for long life and low maintenance. Featured is simple plug-in installation.—*Universal Dynamics Corp., Box 9814A, Arlington 9, Va.*

Circle 352 on Reader Service Card

## PVC Liners for Heavy Duty

Formulated to answer special packaging, storing, and shipping problems is a new heavy-duty liner made of 20-mil polyvinyl chloride.

Initially supplied for 55-gal. drums, liners can be made to "fit like a glove" in any size container, either square or round.

Cited is material's high tensile and tear strength, also wide temperature range (—25F. to 230F.).

Used in conjunction with fiber, steel, or wooden drums or tanks, the liners assure leakproof storage or shipping.—*Protective Lining Corp., 22 Woodhull St., Brooklyn, N. Y.*

Circle 353 on Reader Service Card

## Handy Fold-Stack Boxes

Great convenience, with emphasis on space saving, features new folding-stacking boxes for storing and shipping.

Of steel welded construction, units have special-design mortise legs and tenon-type top corners. Thus they readily fit together (photo) to form extra-stable stacks. No tools are required for setting up or folding.

Made to customer's specifications, including load capacity, boxes can be furnished with a half-doors that fold out to permit removal of contents without moving stacked box.—*Palmer-Shile Co., 15981 Fullerton, Detroit 27.*

Circle 354 on Reader Service Card

## Jiffy Carton Stapler

Time-consuming taping and gluing of cartons is eliminated with use of this electric-drive wide-crown "Speed-Stitcher."

Machine forms staples with crowns up to 1⅜-in. width from

**LA PORTE**

**FLEXIBLE STEEL CONVEYOR BELTS**

Fabricated from .047 Cold Rolled Galvanized Steel and reinforced with No. 12-gauge Galvanized Wire, these rugged La Porte Conveyor Belts are built to last under hard continuous use.

More than this, the flexible, open-mesh design, that permits the free circulation of air and liquids around products in process, withstands impacts at the receiving platform, loading hopper and shipping dock. It also meshes perfectly with the La Porte Sprocket to assure a positive drive, eliminating tracking problems. La Porte Belts retain their shape, are easily sterilized while in motion and require little maintenance.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte Belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY

**LA PORTE MAT & MFG. CO.**
Box 124
La Porte, Indiana

**Please send free literature on your Conveyor Belt.**

NAME_____

ADDRESS_____

CITY_____ STATE_____


## *Equipment and Supplies*

coiled wire, producing 12,500 staples from 25-lb. coil spool without reloading. Wire is available with either galvanized or copper finish.

Maker states that unit will staple through single or double-wall corrugated, A, B, or C flute, also fiberboard. It's offered in 12-in. or 20-in. throat, bottomer, straight arm, thin blade, and combination models.—*Inland Wire Products Co., 3947 S. Lowe Ave., Chicago 9.*

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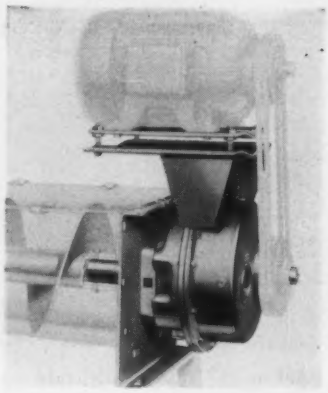


### New Screw Conveyor Drive

New efficiency is accented in the design of this all-steel helical gear drive for screw conveyors. Six sizes—with ratios of 4:1, 9:1, 14:1, and 24:1—are offered to fit all ½-30 hp. conveyors.

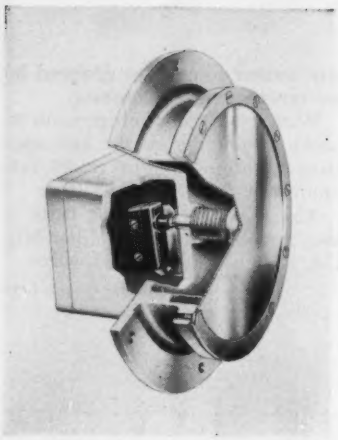
Motor mount and trough end are optional. Basic drive (reducer with seal housing and removable drive shaft) combines with standard trough end and motor mount. Tapered roller bearings absorb conveyor thrust, eliminating need for thrust bearing on trough end.

Trough ends, in eight sizes 6-20 in., bolt to any standard unit. Offered is a choice of seals between conveyor and reducer to suit conveyed material.—*Falk Corp., Box 492, Milwaukee.*

Circle 356 on Reader Service Card

## INGREDIENTS

**New Sweeteners** are Sucrodex (combining sucrose and dextrose), Inverdex (invert/dextrose), Amberdex (amber sucrose/dextrose), and Cane/CSU (a cane and corn syrup). Maker accents versatility of products, which are offered in different cane-corn ratios to suit individual requirements.—*Refined Syrups & Sugars, Inc., Federal St., Yonkers, N. Y.* (357)



### Automatic Bin-Level Gage

Heavy aluminum casting body and stainless steel diaphragm of this highly sensitive bin-level indicator give protection from chemical action even when in suspension within material.

Spring-loaded diaphragm and sensitive switch mechanism make unit extremely responsive to pressure of low and high density materials.

Pressure against diaphragm sets off desired signal. Indicator can also be set to automatically start or stop material flow and filling machinery. —*Bin-Dicator Co., 13946-L Kercheval, Detroit.*

Circle 358 on Reader Service Card

## NEW SUPPLIES

**Penetrating Rust Solvent,** KPO No. 1, is cited for its exceptional wetting power. This property makes for new speed in freeing stuck bolts, flanges, pulleys, couplings, and the like.—*Keystone Lubricating Co., 3100 N. 21st St., Phila. 32.* (359)

**Slime Eliminator,** tradenamed New Pasturite, curbs algae and bacterial growths, stops scale build-up in brewery pasteurizer units. Its application, says maker, reduced frequency of clean-outs.—*J. B. Ford Div., Wyandotte Chemicals Corp., Wyandotte, Mich.* (360)

**Self-Curing Zinc Coating,** called Zinkote, is heralded as saving up to 50% in application time. Simply brush or sprayed over steel, it's a non-toxic surface-protectant, won't contaminate food.—*Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.* (361)

**New Mold-Inhibiting Paint,** for packing areas, interiors of coolers,

*Attention cereal makers:*

# Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red Star's brand name for Torula Yeast U.S.P.) is your answer. And you can actually *save* money. Here's what we mean:

**How will Tora Food improve nutritional content of cereal?** Here are some specific nutritional factors housewives know and look for in cereal. This chart shows you how Red Star Tora Food increases these factors in a typical cereal—corn meal.

**PER 100 GRAMS OF CORN MEAL**

| | Corn meal as is | Corn meal plus 3% Tora Food |
|---|---|---|
| Protein | 9.00 grams | 10.50 grams |
| Vitamin $B_1$ | 0.30 milligram | 0.66 milligram |
| Vitamin $B_2$ | 0.08 milligram | 0.20 milligram |
| Niacin | 1.90 milligrams | 2.80 milligrams |

**What totally will Tora Food add to cereal?**
(At a level of 3# to 100#)

| | |
|---|---|
| Vitamin $B_1$ | 163.5 milligrams worth |
| Vitamin $B_2$ | 54.5 milligrams worth |
| Niacin | 408.6 milligrams worth |
| Vitamin $B_6$ | 40.8 milligrams worth |
| Para-amino benzoic Acid | 20.4 milligrams worth |
| Pantothenic Acid | 150.0 milligrams worth |
| Folic Acid | 95.3 milligrams worth |
| Choline | 4.8 grams worth |
| Inositol | 5.4 grams worth |
| High quality Protein | 1.5 lbs. |

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

**How can Tora Food actually save you money?** The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on handling and inventories. Instead of buying, storing, handling and keeping books on 10 or more different ingredients, you need handle only *one* when you use Red Star Tora Food.

**How else will Tora Food improve saleability of cereal?** Tora Food will intensify the flavor of your cereal. It has a mild, pleasant flavor with the ability to enhance the natural flavor of the product to which it is added.

Furthermore, Tora Food is an antioxidant and helps give your cereal longer shelf life.

**Who besides cereal makers can use Tora Food?** Almost any food processor. Here we've talked specifically about cereal makers, but baby food processors are already using Red Star Tora Food successfully. And here are some other types of processors who can use Tora Food to big advantage: spice, soup, chocolate, peanut butter, sauce and gravy, health food, smoked yeast and pharmaceuticals.

If you are a cereal maker (or *any* food processor) who wants a new sales-boosting nutrition story, write to us. We'll be happy to show and discuss with you work and analysis that has been done. Or if you prefer, we'll be happy to have a nutritionist call on you. Write to the address below.

*Nutritional Division*

## RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin



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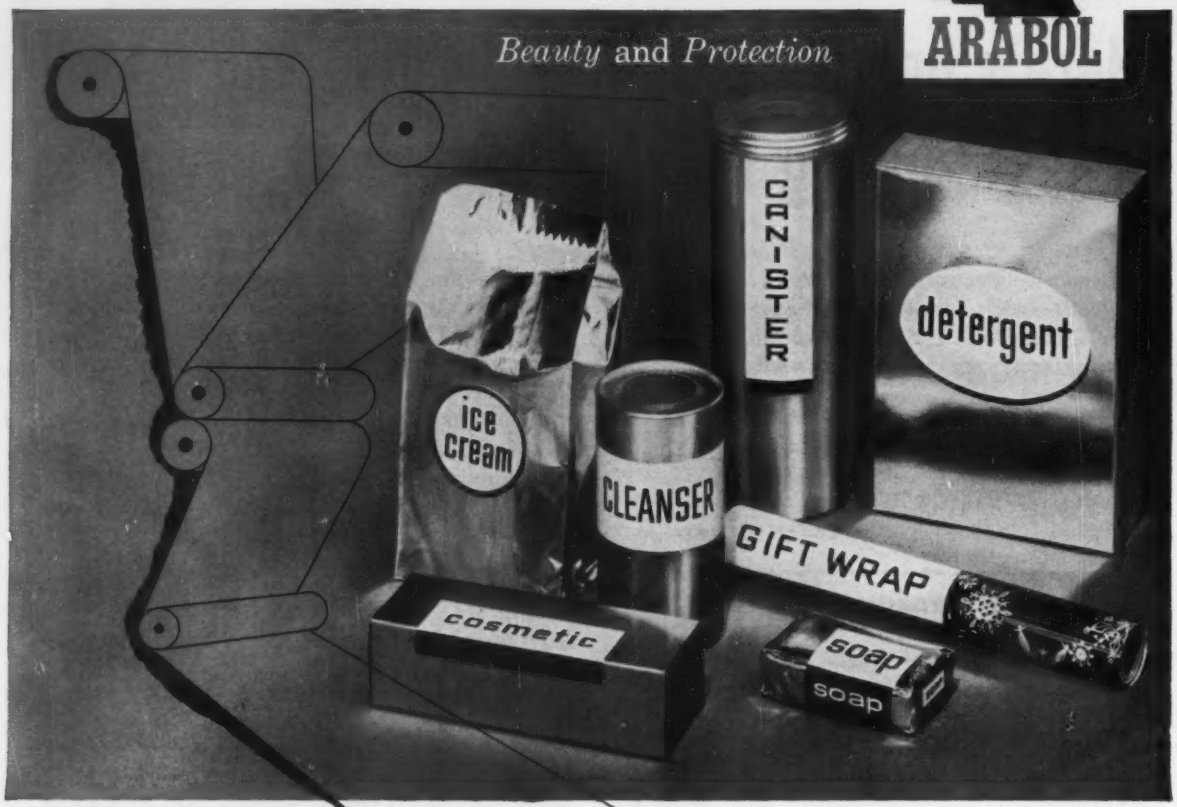
Headquarters for SPECIFICATION ADHESIVES

ARABOL




# *FOR LAMINATING all types of flexible materials*

Modern packaging, wrapping and labeling frequently call for combinations of foil, film, textile, leather, paper or paperboard—fabricated with special, dependable adhesives. The aim may be simply for finer appearance or for some special barrier against heat, cold, moisture or rough handling.

In each case, it is a special problem; an engineered selection of materials—*and adhesives*. And nowhere is the value of ARABOL Specification Adhesives more clearly demonstrable. At little or no extra cost, your adhesives are specification-formulated—in terms of the exact materials to be combined and the exact methods and working conditions under which you will use them.

For all your adhesives requirements—whether in the making of your product or in its packaging, wrapping, labeling or shipping—we invite the opportunity to submit formulated samples—for tests to be made in your own plant—under your particular working conditions. That is the one kind of testing that assures you of satisfactory results.

Our fourteen plants and warehouses—plus four laboratories—are your assurance of service and delivery. It is our privilege to serve both large and small users. May we send you a booklet suggesting 23 basic specifications you should consider before you next buy adhesives?

**GOVERNMENT SPECIFICATIONS ON ADHESIVES:**
If you are working to Government Specifications, call on our long experience in service to the Military and other Government Agencies.

**THE ARABOL MFG. CO.**
*a nationwide organization serving major users of industrial adhesives*
**EXECUTIVE OFFICES: 110 East 42nd Street, New York 17, N. Y.**
CHICAGO • SAN FRANCISCO • LOS ANGELES • ST. LOUIS • ATLANTA
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McALLEN, Tex. • CINCINNATI • DENVER • TAMPA • LONDON, Eng.

74 YEARS OF PIONEERING IN THE MAKING OF ADHESIVES

etc., gives odorless coating that stands up under frequent washings. Named "White China," product employs barium metaborate minohydrate as active ingredient. One gallon covers up to 500 sq. ft.—*Koch Supplies, Kansas City 8, Mo.* (362)

**Plastic Coatings** are newly offered that provide tough, glass-like chemical-resistant surface to wood, concrete, or metal. Named Epothanes, they're applicable to walls, floors, equipment, tanks, and pipelines.—*The Farboil Co., Baltimore 30, Md.* (363)

**New Germ-Control Product** is "Sani-Dust." Government approved, it's used to pre-treat mops and cleaning cloths, which then quickly sanitize surfaces subject to contaminants.—*Talb Industries, Inc., Front & Master Sts., Phila.* (364)

## BRIEFS

**Non-Jiggle Gage Base,** tradenamed "Stedy-Mount", makes for clearer pressure readings, lengthens gage life by damping vibrations. It's specially applicable for use on reciprocating compressors and piping systems.—*Vilter Mfg. Co., Milwaukee 7, Wis.* (365)

**Progress-Control System,** IBM 357, electronically speeds current-operations data to plant managers for up-to-minute action. Running work reports feeding to central office are summarized and flashed to management for speediest corrective decisions.—*Data Processing Div., International Business Machines Corp., 112 E. Post Rd., White Plains, N. Y.* (366)

**Special Mixer,** newly offered, is Airmix. Unit employs air-injection head operating in cylindrical tank having conical bottom (licensed to General Motors for U.S. distribution).—*Mengtechniek N.V., Voorthuizen, Netherlands.* (367)

**Steel-Plate Floorings** are laid over concrete base surfaces to give long wear and easy cleaning in such heavy duty areas as low-temp storage rooms, floor-conveyor runs, trucking aisles, etc. Units are 12-in. diamond-surfaced squares. Epabond epoxy resin joins them to floor and to each other, to form sealed, non-seepage surface.—*Ralph V. Rulon, Inc., 3900 N. 2nd St., Philadelphia 40.* (368)


# FLUIDICS* AT WORK

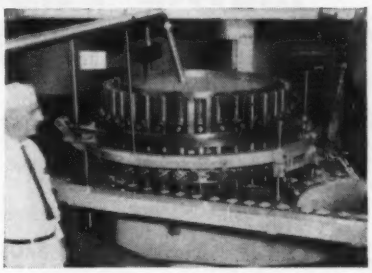
## From mite to mighty... fill them all with Pfaudler fillers

Whatever size your container . . . #211 x 101.5 can or gallon; whatever your product . . . a spread like deviled ham or lightly fluid antifreeze, a Pfaudler rotary piston filler will handle it for you fast, at low cost and without spill.

The Wm. Underwood Co. at Watertown, Massachusetts, uses a Pfaudler RP-35 filler to package over 500 cans of viscous deviled ham a minute. Accuracy is held to ±1/10 fluid ounce—thus cans come off the filler clean.

A Southwestern petroleum manufacturer fills antifreeze at 60 to 80 *gallon* cans a minute using a seven-station Pfaudler machine. Similar results are common in citrus, soup, syrup and evaporated milk plants.

**Simplicity of design** is the all-important characteristic of Pfaudler fillers. Low maintenance—only four primary wearing parts. Fast cleaning—one man does a thorough job in just 30 minutes. High accuracy—precision adjustment even



Underwood Deviled Ham is filled at a rate of over 500 cpm, using this Pfaudler 35-station rotary piston filler.

at full operating speeds. No product loss . . . positive acting no can-no fill mechanism.

**For more information,** write to our Pfaudler Division, Dept. FE-129, Rochester 3, New York. Or contact your Pfaudler representative.

*FLUIDICS is a new Pfaudler Permutit program that provides a modern, imaginative approach for handling and processing liquids and gases more profitably.

**PFAUDLER PERMUTIT INC.**
Specialists in FLUIDICS . . . the science of fluid processes

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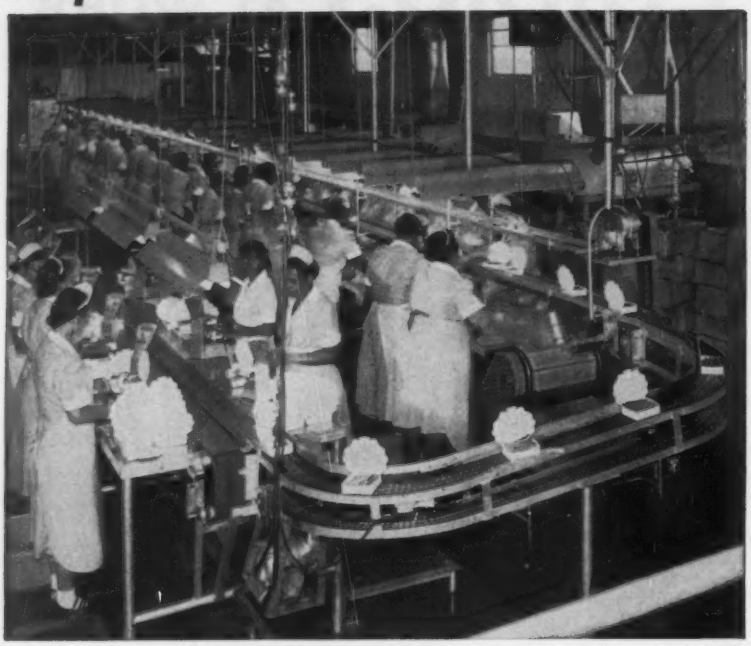
# Keep Your Product on the Move



*Ashworth Omniflex Belt carries frozen asparagus . . . rapidly . . . economically*

## with ASHWORTH METAL PROCESS BELTS

Whether it is baking, deep frying, quick freezing, cooling or any other process operation, you can keep your product on the move better with a belt designed to the specific job.

Fabricated from any metal capable of being formed into wire, Ashworth Belts provide a conveying medium permitting processing in transit through temperatures from −50° to 2100° F. Wherever your product must go during processing, be sure to get the "right" belt for the job . . . consult an Ashworth engineer.

*Illustrated literature available*

**ASHWORTH BROS., INC., WINCHESTER, VIRGINIA**

**SALES ENGINEERS:** Atlanta, Baltimore, Boston, Buffalo, Charlotte, N. C., Dallas, Detroit, Fall River, Mass., Greenville, S. C., Louisville, New York, Philadelphia, Pittsburgh, Rochester, St. Louis, St. Paul, Tampa, Canadian Rep., Peckover's Ltd., Toronto, Montreal.

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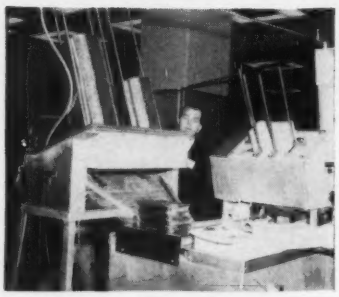
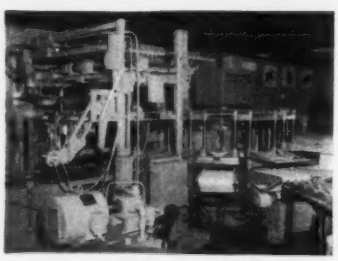
## Advanced Packaging Units

*Continued from pg. 58*

**NECK BAND MACHINE** applies pre-cut cellulose units to round or flat bottle necks at 50-150/min.—Gisholt Mch. Co., Madison, Wis. (319)



**CAPPER-CLOSER** deposits covers on foil containers, precrimps and seals closure in single station. Change-over time reduced by universal carrier and single-motion conveyor action.—Ekco-Alcoa Containers, Inc., Wheeling, Ill. (320)



**CASE SEALER'S** self-adjustable to handle, in random fashion, different size cases. Unit saves space by sealing while traveling in circular path.—J. L. Ferguson Co., Joliet, Ill. (321)

**RANDOM SEALER** self adjusts to case size from 8x8x8 to 18x18x18 re-



**CIRCLE 123 ON READER SERVICE CARD→**

# RYKON *Grease*

## *passed this test at Corn Products Company*

**Situation:** The springs in the grease chargers on expeller machines at Corn Products Company's Argo, Illinois, plant are under extra heavy tension. Due to this tension, oil formerly separated from the grease thickener in the grease cups. Bearings did not receive proper lubrication and the cups filled with grease thickener residue. The system needed cleaning every three months. Each time, large amounts of residue were found. Ten special-purpose greases were tried in an effort to solve the problem.

**What was done:** A Standard Oil lubrication specialist working with Corn Products' plant maintenance people recommended RYKON Grease #2 E.P. The system now needs cleaning only every six to nine months. Very little residue is found. Now RYKON Grease has become one of the important lubricating greases in use at Corn Products' Argo plant.

RYKON Grease is formulated with a unique non-soap organic thickener. The fibers of this thickener hold RYKON's fine quality base oil firmly in suspension. The grease resists water washing, high temperature and dirt contamination while providing superior lubrication to bearings of all types.

**What you can do:** Get more facts about RYKON Grease from the Standard Oil office nearest you anywhere in the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Ill.**

*You expect more from* **STANDARD** *and you get it!*

Standard's Arnold Parus and chief lubrication foreman Henry Anderson take a look at expeller unit's grease system. Arnold Parus is well equipped through experience and training to work with plant men on lubrication problems. Arnold has a B.S. degree from Bradley University and three years' field experience in this kind of work. He has also completed Standard's Sales Engineering School.

*Quick facts about* **RYKON** *Grease*

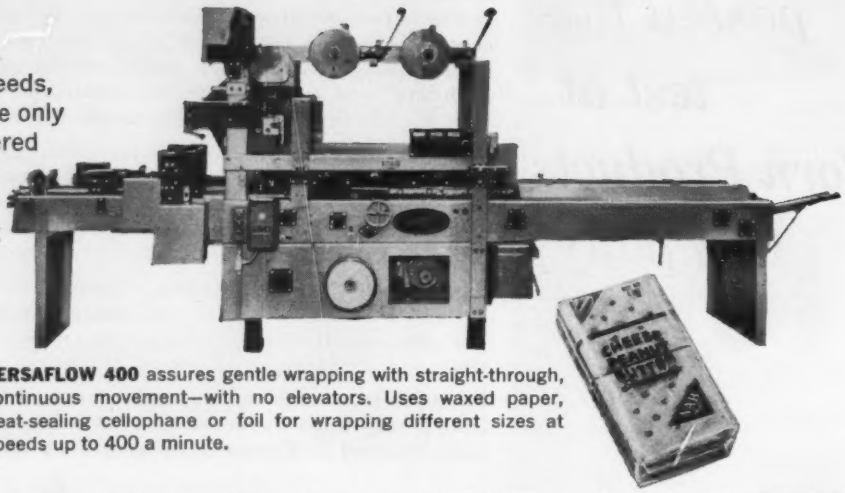
- Heat stable. At sustained high temperatures, RYKON Grease remains soft and grease-like.
- Resistant to water washing.
- Mechanically stable. Minimum change in consistency in service.
- Resistant to oxidation. Thickener acts as inhibitor.
- Exceptional rust preventive properties.

For Speed and Versatility in

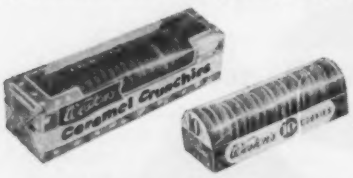
# BISCUIT and CRACKER WRAPPING

## . . . PACKAGE offers a complete line

Precision wrapping, high speeds, gentle handling . . . these are only a few of the advantages offered by the full line of PACKAGE wrapping and bundling machines, designed to meet the demand for packages that sell . . . wrapped on machines that save.



**VERSAFLOW 400** assures gentle wrapping with straight-through, continuous movement—with no elevators. Uses waxed paper, heat-sealing cellophane or foil for wrapping different sizes at speeds up to 400 a minute.




**MODEL FA** is the most versatile of all Package models. Adjusts quickly to handle a wide size range. Speeds up to 120 packages a minute; handles full range of wrapping material including polyethylene. Wraps cartons, open trays or quarter pounds.

**FORGROVE MODEL 4C** wraps loose biscuits and crackers in package lengths up to 8" long. Handles a variety of shapes and sizes and is gentle enough for the most delicate product. Uses heat-sealable materials at speeds from 40 to 60 packages a minute.

**VERSAFLOW 150** provides continuous, uninterrupted flow from infeed to discharge, assures gentle handling at speeds up to 150 a minute. The Versaflow 150 wraps in a variety of heat-sealable materials, handles a wide range of sizes.

**MODEL F10 BUNDLER** is designed to save material costs by replacing cardboard boxes with machine-made bundles. Overwraps in kraft paper and applies printed end seals. Wraps different sizes at 8 to 24 bundles a minute.

**TRANSWRAP** automatically measures the product, forms and fills the package, then seals it, ready for the consumer. Equipped with a new net weight scale designed to eliminate weighing error, and provide maximum accuracy at high speeds.

**DF1** is a versatile machine that will handle a variety of small packages with neat, attractive wraps. Perfect for high-speed wrapping of crackers used in vending machines.

*Call your PACKAGE representative today, for profitable packaging tomorrow.*

PACKAGE MACHINERY COMPANY, EAST LONGMEADOW, MASS.
NEW YORK • PHILADELPHIA • ATLANTA • BOSTON • CLEVELAND • CHICAGO
KANSAS CITY • DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • SEATTLE
TORONTO • MEXICO CITY

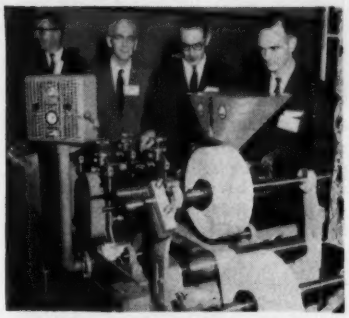
PACKAGE

PMMI

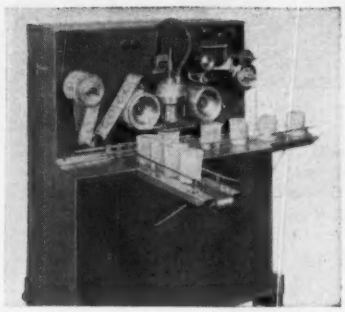
## *Advanced Packaging Units*

*Continued from pg. 122*

gardless of sequence, at 6/min.—Union Bag-Camp Paper Corp., N. Y. C. (322)

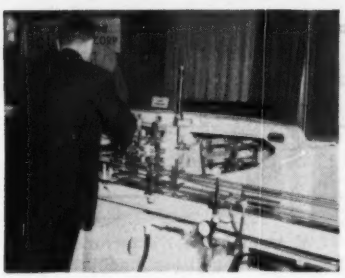


**ADHESIVE APPLICATOR** for granular hot melts continuously converts granules to liquid and extrudes as needed.—Displayed by National Starch & Chem. Co., N. Y. C. (323)

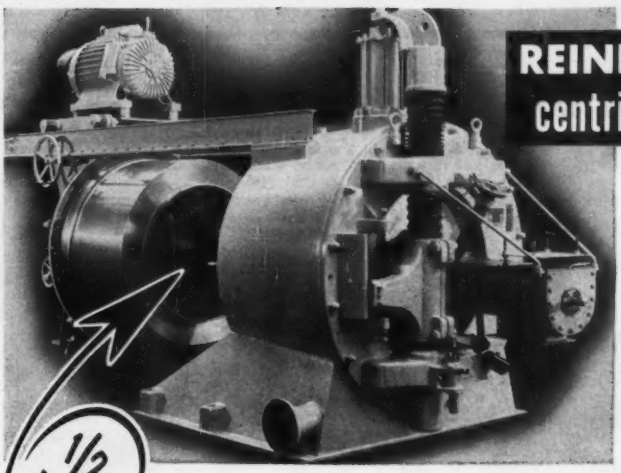


**PLASTIC CONTAINER SEALER** uses roll-fed pre-scored Mylar-Saran-poly laminate. This is automatically positioned and sealed on filled 8-16 oz. round plastic cups at 35/min.—Plastomatic Corp., Malvern, Pa. (324)

### 4 Other Units



**ROTARY BOTTLE CLEANER** for taper necks employs Neoprene entry nozzle to introduce low-pressure air while inverted. Speed to 300/min. — Pneumatic Scale Corp., Quincy, Mass. (325) (Cont'd)


That's all the time needed to open, thoroughly clean and inspect, and close this automatic stainless steel Reineveld Horizontal Separator.

This means sanitary operation at all times and at least double the output of any other machine. Yield is higher, too, as solids remain undisturbed after separation until cut-out.

*Consult our listing in CEC or write for bulletin 356.*

***Sold and Serviced by:***

**HEYL & PATTERSON, inc.**

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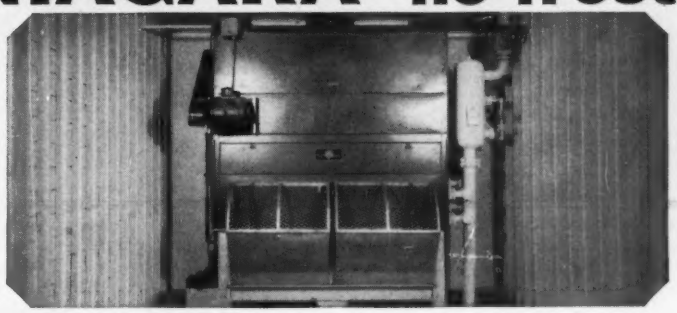
H&P

CIRCLE 229 ON READER SERVICE CARD

# NIAGARA "no frost"



## GET THE BEST QUALITY IN FROZEN FOOD

● Operating men, who know both costs and profits, will tell you that Niagara "No-Frost" gives you the best operation in frozen foods... both in freezing and in warehousing where trustworthy, safe storage temperatures must be combined with building layout that lets you *move* goods... not just store them. Only Niagara methods give you safe and even temperatures with over 20′ head room so that you can use your fork lift trucks and palletized warehousing efficiently. And "No-Frost" refrigeration shows the lowest upkeep costs in the business.

*Write for Bulletin No. 105*

**NIAGARA BLOWER COMPANY**

**Dept. FE-12, 405 Lexington Ave., New York 17, N. Y.**

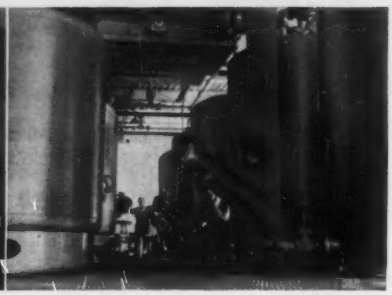
*District Engineers in Principal Cities*




CIRCLE 125 ON READER SERVICE CARD

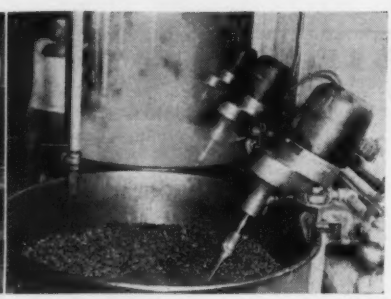
## What's keeping you from getting TOP MIXING RESULTS?

*Many things determine how well you mix fluids. Here's a quick review of main points to watch.*



**1. Mixing pattern?** Be sure it's fitted to your process. A vortex like this is good if you're wetting powders, not so good for other mixing jobs. To get competent suggestions on the *right* mixing pattern, call in your experienced LIGHTNIN Mixer representative.

**2. Tank shape?** For best possible mixing, experts recommend a "square" batch (tank height equal to diameter). But don't hesitate to use a special shape if it will help your process. You can get excellent mixing in *any* tank with LIGHTNIN Mixers.



**3. Changing requirements?** Build versatility into your mixing line—with LIGHTNIN Portable Mixers. You can always expand at low cost by adding a unit. Careful selection can also enable you to adapt the LIGHTNIN Portables you buy now to other jobs later on.

**4. Hard-to-handle materials?** You can mix fluids of many thousand centipoises viscosity with LIGHTNIN Mixers. Handle heavy suspended solids, pulps, fibers, fine powders. Special impellers give you wide choice of cutting, beating, whipping, and other effects.

**You're sure about results** when you mix with LIGHTNIN Mixers. Every one is guaranteed, unconditionally, to do the job for which it is recommended. For prompt service on fluid mixing, just call your LIGHTNIN Mixer representative. Look him up in Thomas' Register or the Yellow Pages of your telephone directory. Or write us direct.

LIGHTNIN®

MIXERS AND AGITATORS

MIXCO

Fluid Mixing Specialists

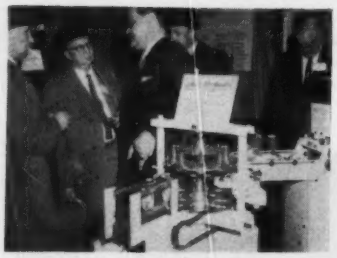
**MIXING EQUIPMENT Co., Inc., 143-n Mt. Read Blvd., Rochester 3, N.Y.**

*In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.*

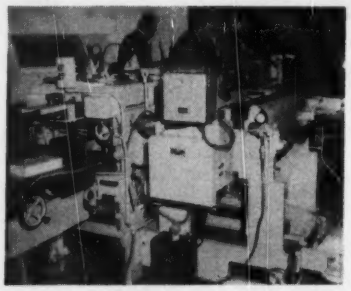



## Advanced Packaging Units

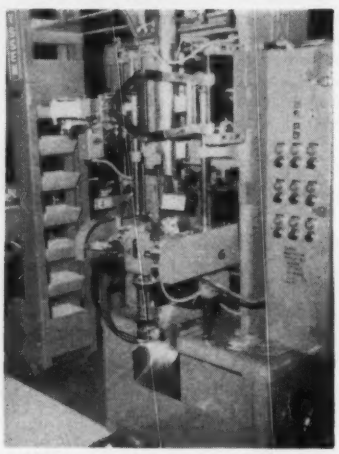
*Continued from pg. 125*



**SELF-POWERED CODER** imprints can tops at 1,000/min. Unit's 8 printing heads on rotating wheel are inked before each impression. —Adolph Gottscho, Inc., Hillside, N. J. (326)



**OVERWRAP MACHINE** operates at 75/min., handles wide variety of soft plastic films. Employs high-speed, continuous-flow motions, actuated with minimum of cams. Cut-scoring device produces easy-opening package.—Battle Creek Packaging Machines, Inc., Battle Creek, Mich. (327)



**NEW** header label attachment for pouch forming-filling machine feeds and indexes labels from roll stock, attaches it to formed film as it pauses on filling tube. Attachment frees two operators from job of feeding pouches to semi-automatic labelers.—Hayssen Mfg. Co., Sheboygan, Wis. (328)

# ...flavor by Webb

Repeat sales (the best measure of customer satisfaction) begin with quality ingredients. And you start with a competitive edge when you specify flavors by Webb— outstanding for trueness, delicacy, uniformity and strength. Specialists in flavors and custom flavor development for over fifty years. Inquiries invited. Catalog on request.

**R. D. WEBB & CO., INC.**

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# *It's the Nash!*

The ability of Nash Compressors to maintain original performance over long periods is no accident. Nash Compressors have but a single moving element, the Nash Rotor. This rotor is precision balanced for long bearing life, and it revolves in the pump casing without metallic contact. Internal lubrication, frequent cause of gas contamination, is not employed in a Nash. Yet, these simple pumps maintain 75 lbs. pressure in a single stage, and afford capacities to 6 million cu. ft. per day in a single compact structure.

Nash Compressors have no valves, gears, pistons, sliding vanes or other enemies of long life. Compression is secured by an entirely different principle of operation, which offers important advantages often the answer to gas handling problems difficult with ordinary equipment.

Nash Compressors are compact and save space. They run without vibration, and compression is without pulsation. Because there are no internal wearing parts, maintenance is low. Service is assured by a nation-wide network of Engineering Service offices. Write for bulletins now.

**No internal wearing parts.**

**No valves, pistons, or vanes.**

**No internal lubrication.**

**Low maintenance cost.**

**Saves floor space.**

**Desired delivery temperature Automatically maintained.**

**Slugs of liquid entering pump will do no harm.**

**75 pounds in a single stage.**

**NASH ENGINEERING COMPANY**

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# U. S. P. PROPYLENE GLYCOL

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U. S. PHARMACOPOEIA Grade Propylene Glycol has low toxicity and excellent solvent, hygroscopic and preservative properties which make it preferred in a great variety of food processes. Food flavor, color or emulsion solvent; flavor extractor; humectant in packaged food products . . . these are a few of the proved applications for U.S.P. Propylene Glycol.

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Ethylene and Propylene Oxides, Glycols, Dichlorides • Ethanolamines
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*Essential Chemicals From Hydrocarbon Sources*

# NOW..."custom plan" your conveyor system with *Standard*

## HANDIDRIVE

and Standard units for complete belt, "live" roller and gravity roller set-ups

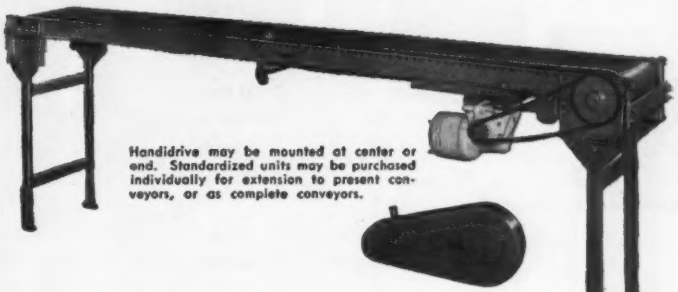
Handidrive conveyors are made up of pre-engineered standardized units, such as drives, take-up units, end roller assemblies, intermediate framework, supports and hangers.

## Easy to engineer and install . . . at low cost

You can assemble and build a system "custom-planned" to suit your individual needs with Handidrives and other Standard units available out of stock. This service enables you to adapt and change the system from time to time to meet varying requirements as they arise, at exceptionally low cost.

Handidrive conveyors may be individually leveled or inclined. Independent units may be purchased separately to construct power conveyors as desired.

Let Standard show *you* how to build or convert your own conveyor systems with Handidrives. Write: STANDARD CONVEYOR COMPANY. General Offices: North St. Paul 9, Minn.



Handidrive may be mounted at center or end. Standardized units may be purchased individually for extension to present conveyors, or as complete conveyors.

*Ask Standard how to cut costs with conveyors*

*Send for Handidrive Bulletin No. 64. Write Dept. D-12.*

OVER 50 years of conveyor experience

GRAVITY & POWER
CONVEYORS

*Sales and Service in Principal Cities*

# GAYLORD PACKAGING
## HELPS YOU STAY ONE STEP AHEAD

Whatever your avenue of approach to packaging,
Gaylord's awareness of the latest material handling techniques
helps you prevent traffic jams in packaging.

Whether you're on Broadway or Main Street,
there's a friendly G-Man nearby to help you avoid
costly dead-ends. Call him today.

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PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

# JUST OFF THE PRESS

## PLANT ENGINEERING

**Drying Equipment.** Details units for removing moisture from low pressure gas-air streams. 8p.—Gas Atmospheres, Cleveland. (411)

**Bearing Blocks & Takeups.** Introduces new series of sizes, details firm's full line. 16p.—Link-Belt Co., Chicago. (412)

**Boilers.** Details 2-pass unit's design, specs, range of sizes. 12p.—Titusville Iron Works Co., Titusville, Pa. (413)

**Water Heaters.** Principles and features of gas-fired packaged unit. 20p.—Patterson-Kelley Co., E. Stroudsburg, Pa. (414)

**Cooling Tower Accessories.** Describes features of fan hub puller, derricks, hoists, switches, etc. 4p.—Marley Co., Kansas City, Mo. (415)

**Alloys.** Outlines applications in tubing and pipe; details corrosion resistance. 6p. — Carpenter Steel Co., Union, N. J. (416)

**Package Drive.** Selection tables and specs for new Motoreducer model. 4p.——Falk Corp., Milwaukee. (417)

**Air Compressors.** Describes with photos and cutaways firm's unit-type compressors. 12p. — Westinghouse Air Brake Co., Milwaukee. (418)

**Iron Valves.** Lists service ratings, sizes and dimensions, plus material specifications in expanded line. 5p. —Walworth Co., NYC. (419)

**Turbine Pump Motors.** Details vertical model for short-coupled pumping. U. S. Electrical Motors, Inc., Los Angeles. (420)

**Free-Piston Pump.** Details new air-operated model for anything that flows. 4p.—Crossley Machine Co., Trenton, N. J. (421)

**Diffuser.** Features of new self-cleaning aeration unit. American Well Works, Aurora, Ill. (422)

## PROCESSING

**Blender.** Emphasizes exact proportioning of two dissimilar liquids. 8p.—B-I-F Industries, Inc., Providence, R. I. (423)

**Magnetic Flowmeter,** as used for proportioning chill-proof to beer. 2p.—Fischer & Porter Co., Hartboro, Pa. (424)

**Sanitary Fittings.** New catalog covers firm's complete line of bolted clamp CIP fittings, quick clamp fittings and valves, threaded sanitary fittings and valves. Includes useful installation data. 38p. —Cherry-Burrell Corp., Cedar Rapids, Iowa. (425)

**Separators.** Details new line of self-opening centrifugals for liquids with high solid content. 4p.—De Laval Separator Co., Poughkeepsie, N. Y. (426)

**Filter Material.** Cites advantages of fibrous cellulose aid for fruit juice. 4p.—Brown Co., Boston. (427)

**Fermenter.** Illustrates economy features of stainless steel "Dome-Top" unit. 2p. —A. O. Smith Corp., NYC. (428)

**Slaughtering Equipment.** Describes with photos and flowsheets units for every phase of operation. 60p.—Globe Co., Chicago. (429)

**Spray Dryers.** Illustrated bulletin details push-button controlled, factory assembled models. 8p.—Henszey Co., Watertown, Wis. (430)

**Impact Mill.** Describes vertical pulverizers with variable-speed classifier. 4p.—Metals Disintegrating Co., Summit, N. J. (431)

## PACKAGING

**Bead Sealer.** Details new continuous, 1-2 element units with cooling device. 5p.—Doughboy Ind., New Richmond, Wis. (432)

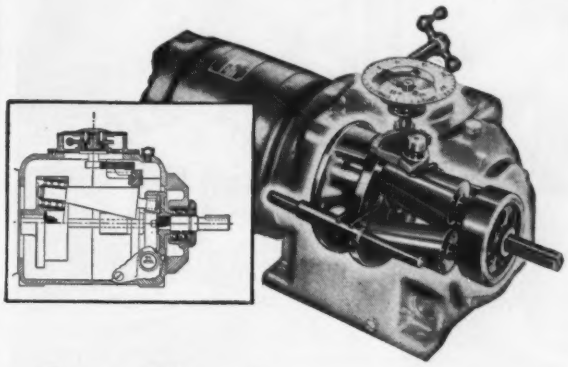
**Packaging Tables.** Details latest model sizes in 16-gage rolled steel. 4p.—Cleveland Lathe & Machine Co., Cleveland. (433)

**Neck Bands.** Features firm's line for supermarket items. 4p.—E. I. du Pont de Nemours & Co., Buffalo. (434)

**Case Opener.** Details improved 4-flap unit. 4p.—Geo. J. Meyer Mfg. Co., Milwaukee. (435)

**Adhesives.** Describes latest


# INFINITE RANGE EXTREME ACCURACY...



*Get Both...*
WITH
*Graham* VARIABLE SPEED DRIVES

The Graham Drive gives extreme accuracy of speed holding and reset from any desired top speed to zero. Range and accuracy are assured through the correct application of metallic traction in the first stage of a compound planetary system.

Three planet roller cones are canted in a carrier to tractionally engage an encircling control ring . . . Pinions on the large ends of the rollers mesh with a ring gear joined to the output shaft . . . Speed is changeable running or stationary . . . Planetary action provides overload protection. The dial permits settings to one part in 4000.

A wide choice of built-in motors, reducers and controls is available in sizes-fractional to 3 HP. Write for full performance data.

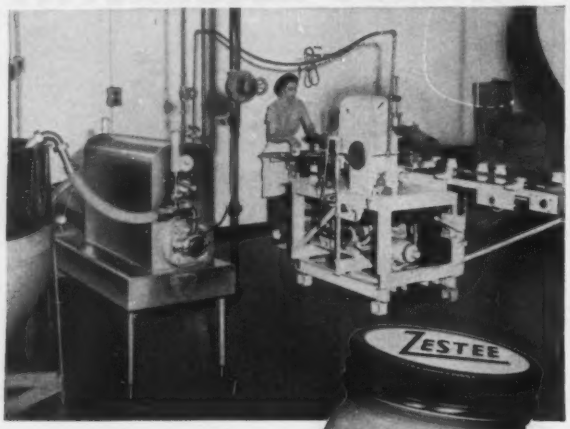
## GRAHAM EXTRA FEATURES

- **Any desired maximum speed to zero, including reverse.**
- **Straight line extension of a standard motor for true compactness.**
- **Wide choice of controls; mechanical, pneumatic or electric, provide remote or automatic control of tension, proportion, synchronization, etc., from any type of control signal—3 to 15 psi, 0.5 to 5 ma.**

***Ask for Graham Catalog 550.***

*Graham* TRANSMISSIONS, INC.
Menomonee Falls, Wisconsin

*ANOTHER FOOD PROCESSOR PROTECTS QUALITY AND PROFITS WITH Creamery Package® EQUIPMENT*




Direct-expansion refrigerant in a compact, mechanically agitated-film, tubular CP Swept Surface Heat Exchanger, shown adjacent to kettle, rapidly cools the starch base for Zestee Salad Dressing. This one cylinder heat exchanger has been specially engineered by CP to meet this fast cooling need. Other units, with one to four cylinders per base, are available for cooling with chilled water, glycol or brine. CP Swept Surface units are available for heating with water or steam.

Swept Surface®
HEAT EXCHANGER
*Meets Fast Cooling Needs of* ZESTEE
SALAD DRESSING

The key to a high bottling rate of a viscous product is fast cooling of the base. At Colonial Manufacturing Co., Inc., Oklahoma City, Oklahoma, this CP Swept Surface Heat Exchanger cools the starch base of Zestee Salad Dressing from 160° to 100° F. at the rate of 2000 pounds an hour, maintaining quality and meeting production requirements on time.

CP Sales Engineers, upon request, will be glad to analyze the possible advantages of CP Equipment in your process.

THE Creamery Package® MFG. COMPANY
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BEVERAGE • BREWING • CHEMICAL • DAIRY • DRUG • FARM • CANNED AND FROZEN FOODS

additions to firm's line.—Adhesive Products Corp., NYC. (436)

**Wire Stitching.** Details specs and describes flat and arcuate methods. 28p. — Acme Steel Co., Chicago. (437)

**Containers.** Photo booklet traces story of firm's broad packaging activities. 32p.—J. L. Clark Mfg. Co., Rockford, Ill. (438)

## MATERIALS HANDLING

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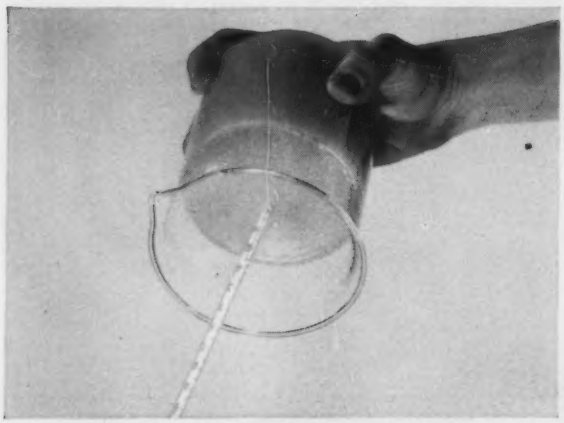

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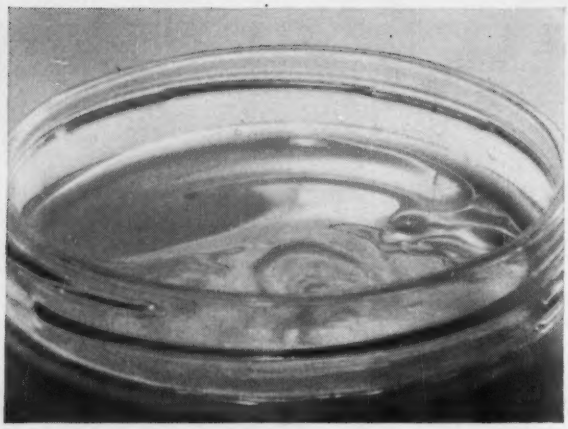

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FOOD: THE 1959 YEARBOOK OF AGRICULTURE. *USDA, Supt. of Documents, Washington 25, D. C. 1959 736 p. Price:* $2.25

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## Plastic Packaging Report

PACKAGING WITH PLASTICS. *American Management Assn., 1515 Broadway, NYC 36. 1959 132 p. Price:* $3.75

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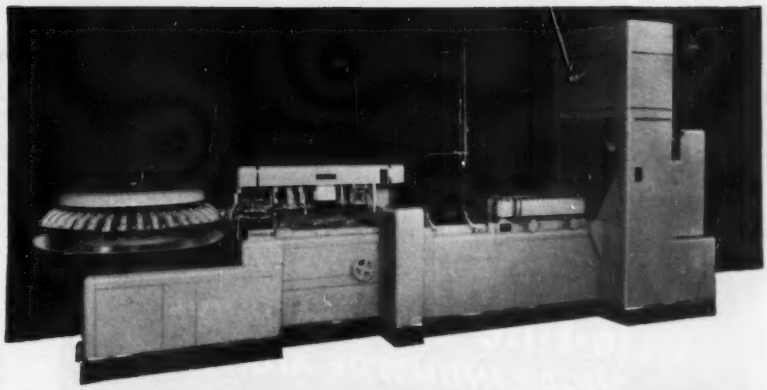
## Booklets & Reports

FEDERAL BASIS FOR WEIGHTS AND MEASURES. *U.S. Dept. of Commerce, Washington 25, D. C. 1959 Price:* 30¢. An historical review of Federal legislative efforts, statutes, and administrative action in weights and measures.

PALLET SIZES. *American Society of Mechanical Engineers, 29 W. 39th St., NYC 18. 1959 20 p. Price:* $2. Covers latest developments in standardization of pallet sizes.

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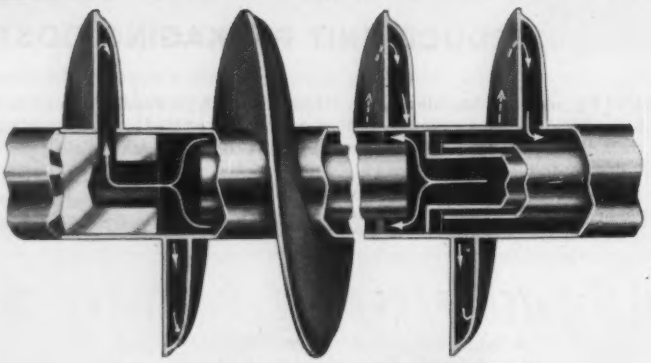

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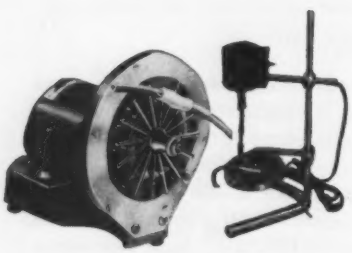

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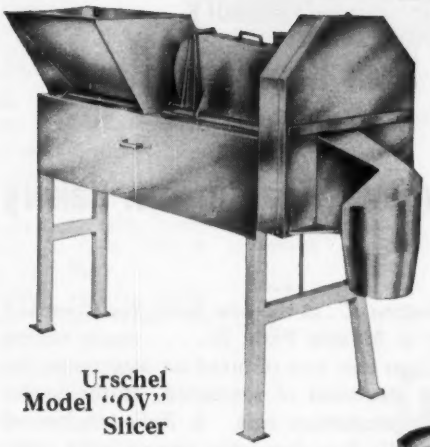
# Give your product slices the *"beauty treatment"* with the Urschel high speed Model "OV" TRANSVERSE SLICER



Urschel Model "OV" Slicer

*Clean, uniform, better-than-ever cross-cuts on*

**PICKLES**
**CARROTS**
**CELERY**
**RHUBARB**
**BROCCOLI**
**Ookra**
**SQUASH**
**BAMBOO SHOOTS**
**WATER CHESTNUTS**

*Plain Slices*

*Corrugated Slices*

**OPERATING PRINCIPLE**

The product to be cut is dropped into a hopper through which it feeds onto two high speed conveyor belts, each sloping inwardly to form a "V" cross-section. • A third conveyor belt then comes down over the top to complete the product enclosure. • Thus, the product enters the slicing wheel completely surrounded by moving conveyor belts and slicing wheel corrugated rolls which insures its positive feed into the knives. • This action virtually eliminates plugging of the machine, and, since the feed to the knives is positive, "thin" slices occur infrequently. • The new unit is so positive in its feeding action that it will feed leafy products easily. • The "V" shape formed by the belts keeps the product in constant alignment with the cutting knives regardless of product diameter, practically eliminating "bias" cuts.

- ***Positive*** **feed action.**
- **No product crushing.**
- **Practically eliminates "thin" or "bias" cuts.**
- **Cuts thicknesses from 1/16" to 1-1/3".**
- **High capacity feeding with maximum cutting yield.**
- **Compact—engineered for long dependable service and low maintenance.**

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*Designers and manufacturers of precision, high speed cutting equipment for food products*

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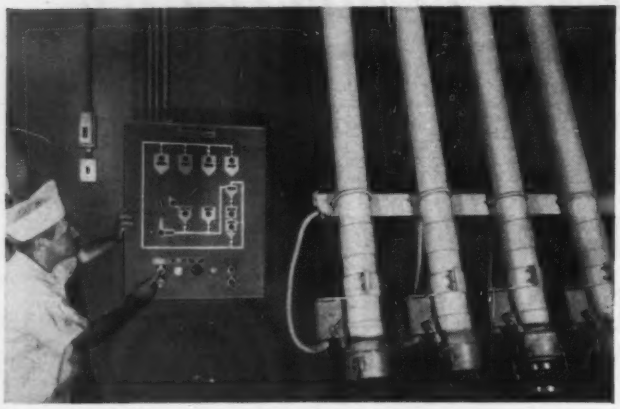
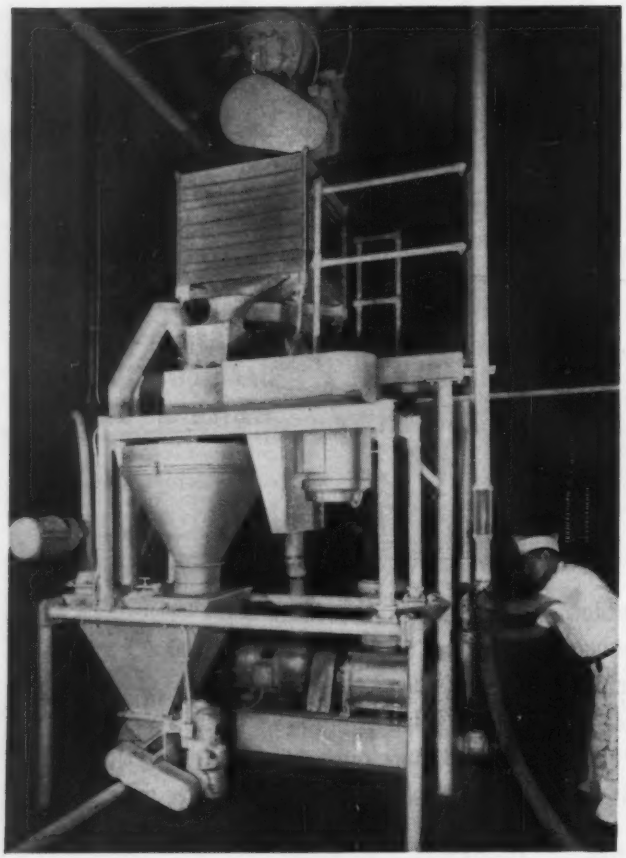
CIRCLE 143 ON READER SERVICE CARD 143

**The Arithmetic of Materials Handling**



Central Control Panel of Jewel Tea's flour-handling system. At right are main conveying lines—each to a separate bin.



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## Pneumatic Conveying System Provides Low Cost, Sanitary Flour Handling Method For New Jewel Tea Co., Inc. Bakery

Automation . . . at the new Jewel Tea Company bakery in Melrose Park, Ill., . . . means baking more than four tons of bread an hour under the highest standards of sanitation, at the lowest possible production cost. A Fuller-engineered *pneumatic* flour-conveying system helps make this record performance possible.

This automatic, smooth running pneumatic conveying system is controlled by one man and a centrally located push-button control panel. By making a simple connection, turning a switch and pressing a button, the operator empties 100,000 lb. GACX Airslide carloads, of bulk flour, into storage bins. Other buttons send the flour through predetermined cycles of sifting, weighing, mixing — in dust-tight, self-cleaning pneumatic lines.

Compact, flexible, easy-to-install Fuller pneumatic conveying systems are *integrated* into your plant processed by Fuller specialists. Write or phone today outlining objectives such as capacity, distance and material to be handled. Fuller engineers will gladly furnish additional information and make appropriate recommendations.

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## ADVERTISERS' LITERATURE

### Materials Handling

**Belting,** conveyor. Booklet "Belt Selector", B. F. Goodrich—463

**Belting,** steel conveyor. Folder, Colorado Fuel & Iron—464

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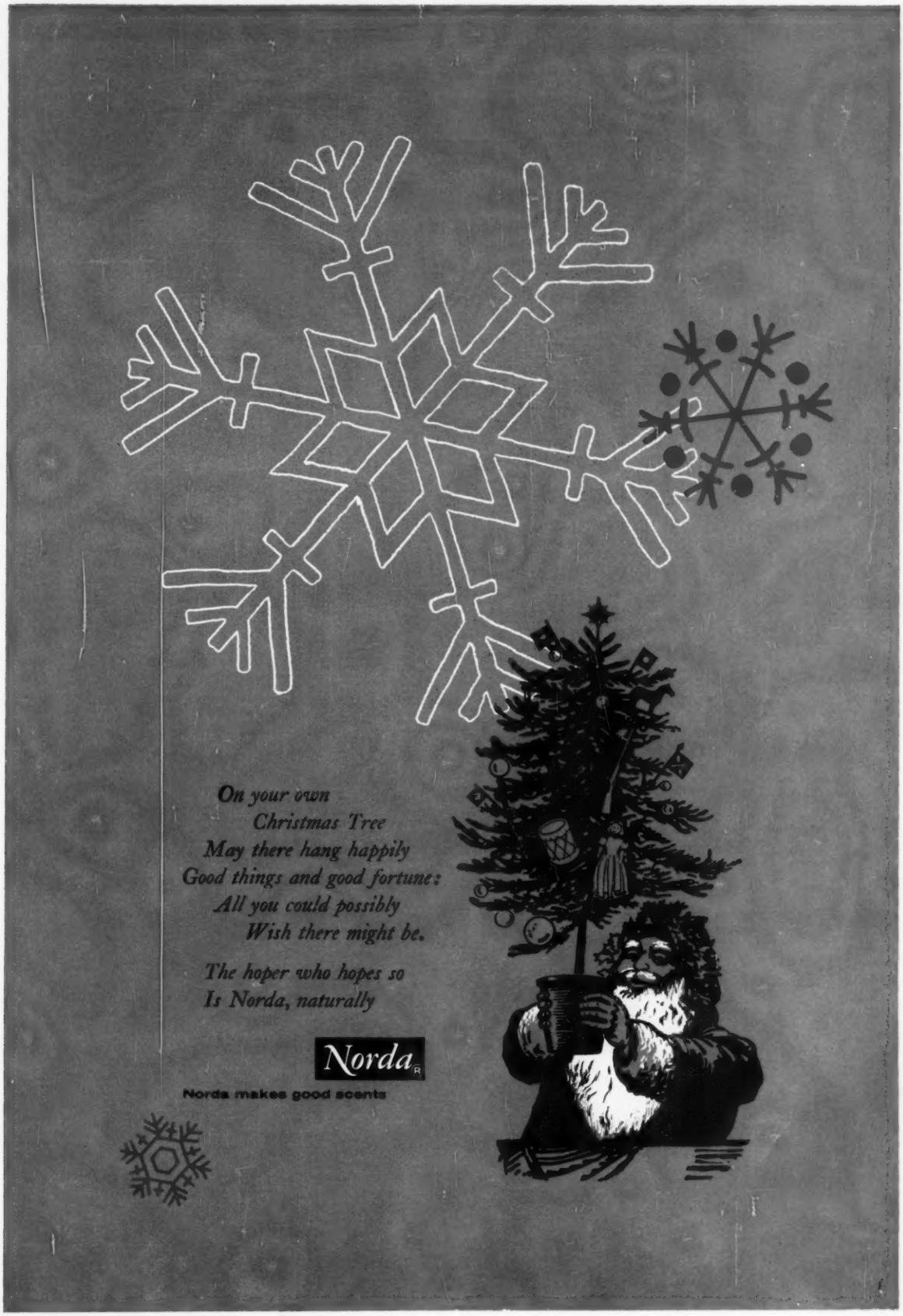
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